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In THE MUNICIPAL INDEX (the annual reference volume of data and condensed catalogs published by the American City Magazine Corporation) readers will find much material, including lists, and articles on a wide variety of municipal and civic subjects, not published in the monthly issues of the magazine.

See pages 19, 21, 83, 85 for notices of catalogs and publications on municipal and civic subjects

For Index to Advertisements see page 106

Funds for WATERWORKS

To progressive towns, cities and villages wise enough to use P W A and C W A funds for long-deferred waterworks improvements, extensions and repairs . . . LAYNE offers the aid of its entire organization in preparing plans and estimates requisite to obtaining the necessary loans or grants, and in carrying out the work so that ultimately the cost may be returned totally or partially in revenue. For further information, write, wire, or use the attached coupon.

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Public Works and Public Economies

*A Temporary Halt in New PWA Allotments**

PUBLIC WORKS ADMINISTRATOR HAROLD L. ICKES has halted submission of new non-Federal projects and has directed his Administration to concentrate its effort on driving the vast total of work provided for in allotments already made into contract and into construction.

A survey of Washington headquarters of PWA and state offices revealed there are over 3½ billion dollars worth of projects on file for which no allotments have been made and for which no money is immediately available because the original PWA fund is exhausted. What per cent of some 7,000 unallotted projects will be found qualified for the PWA program cannot be determined until they are all examined.

The Administrator has sent instructions to all State Engineers to spread the word that no projects for which applications have not been made can be considered now, and to advise local public bodies to save the expense and effort of hastily preparing more projects for submission.

CWA Aid Still Available for State and Local Planning

ON February 20, the following instructions to State Civil Works Administrators were issued by Jacob Baker, Assistant Administrator of the Federal Civil Works Administration:

"In order to assist the National Planning Board of the Public Works Administration in the preparation of a National Plan through coordination of state, regional and city planning efforts:

"*State planning* projects for employment of personnel on surveys, mapping and planning work under official State Planning Boards should be encouraged and facilitated by continuance of CWA planning projects now under way or transfers to satisfy applications made hereafter, and as far as possible by exempting such projects from the terms of general orders directing release of enrolled workers.

"*City and regional planning* projects continue to be eligible for CWA assistance in accordance with the December 8th letter (form CWA-14) from this office to State Civil Works Administrators. Reports from various city planning boards indicate this fact is not fully appreciated by all of our administrators. It has been the policy of this Administration to encourage this type of work.

"Assignment of engineers, architects, draftsmen, statisticians and stenographic help to these state, regional and local planning boards for such projects may be made as local or state projects under the civil works program. You are authorized and directed, so far as may be practical, to have men transferred from inferior local projects or completed projects to planning, mapping, and survey projects of these boards.

"Please see that the appropriate local Civil Works Administrators are informed on this matter."

Slum Clearance Starts: CWA to Tear Down Buildings

THE National Association of Housing Officials is urging its members to cooperate with CWA authorities in getting under way local projects for tearing down useless and insanitary structures—the kind that make up slums. A recent bulletin from Harry Hopkins, CWA head, authorized the undertaking of such projects.

"In several cities," says Coleman Woodbury, Associate Director of the housing group, "vigorous demolition movements are under way. From our knowledge of the experience of these cities, several suggestions as to procedure can be made:

1. Strong local groups, representing official housing bodies, civic groups, professional societies, including social workers, can do much to get the work started.

2. Building and health departments of most cities have power to condemn insanitary and unsafe buildings. They have lists of such buildings which may be used to focus upon at the beginning.

3. Considerable wrecking of old buildings, chiefly to avoid payment of taxes, has been going on in the past few years. Undoubtedly, many owners would voluntarily list their buildings for wrecking without expense to them if they knew about the project.

4. Local ordinances should be checked carefully before beginning. Some cities may have laws such as the Chicago ordinance, which provides that the wrecking of all buildings more than one story high must be done by a licensed wrecking contractor under bond. Whether these can be changed or an exception made, is not yet known.

5. Working relations should be set up with organizations of wrecking contractors. CWA cannot turn the jobs over to them, but despite this, the experience of one city has been that they will cooperate. The contractors may recommend men for supervisory jobs, and their equipment will be rented by CWA, but they receive no contractors' fees.

6. An office staff should be set up at once, if possible under the direction of an experienced man in the building and health departments. The staff will clear data on buildings, verify ownership, check occupancy and provide for rehousing of families living in them."

"The question has been raised as to whether demolition should be undertaken only as a part of a comprehensive housing program," says Ernest J. Bohn, President of NAHO. "Although such a program would be helpful, it is not a necessary part. Public benefit from demolishing individual buildings that are insanitary and dangerous will be considerable, regardless of any present program for rebuilding."

Governor Lehman on "Extravagant Economies"

"BUILDING up is a slow and difficult process, and gains are frequently the result of hard labor and conscientious effort over a protracted period of time. To jeopardize these gains for momentary expediency would indeed be false economy. Under no circumstances must we allow the cry for economy to lead us unthinkingly into what I would call, for want of a better word, 'extravagant economies.'"

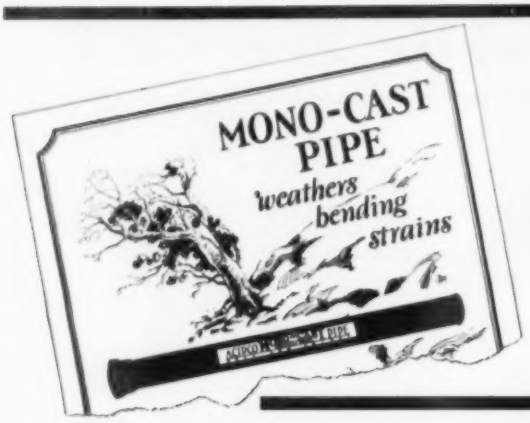
With this warning, Governor Herbert H. Lehman of New York, in a radio address in the "You and Your Government Series" on February 13, urged public officials to make just as sure that each dollar saved is a dollar well saved as that each dollar spent is a dollar well spent.

"There never has been a time within my memory," said the Governor, "when it is of greater importance to think things through from beginning to end—slowly, carefully and deliberately—with a view to making our financial resources carry us as far as possible and at the same time as advantageously as possible. We may have to prune the branches mercilessly and with a firm hand, but let us be sure that we are pruning the right branches lest we cripple the tree. Public officials must seek every sound avenue of economy, but the economy should not be at the expense of essential services or humane and progressive government. No government can jeopardize the health, morals, protection or safety of its citizens. No state can afford to destroy or weaken labor standards which have been built up so laboriously through the sacrifice and vision of forward-looking men and women. No community can disregard its responsibility to its dependent children, its sick or maimed or helpless aged. No community can disregard the responsibility which it owes itself and civilization in the education of its children. . . . Certainly, for the time being, a budget must represent a constructive adjustment between the legitimate needs of government and the ability of the people to pay for these needs."

General Manager for PWEHC

APPOINTMENT of Horatio B. Hackett, of Chicago, as General Manager of the Public Works Emergency Housing Corporation was announced last month.

* See editorial comment on page 43 of this issue.



OLD-TIMERS WILL RECALL THIS AD

One of a series which appeared in leading trade journals during 1926 and 1927.

WHEN Mono-Cast Centrifugal C. I. Pipe was first offered to the trade 10 years ago, *impact resistance and ability to bend while resisting bending* were urged as outstanding characteristics of this new product. A series of advertisements, one of which is reproduced herewith, was published to emphasize these features.

During the past decade, the advantages of these characteristics have become increasingly apparent through the superior performance of Mono-Cast Centrifugal C. I. Pipe in thousands of widely varying installations throughout the United States and in foreign countries.

And so today—as 10 years ago—we emphasize the fact that the Mono-Cast process of centrifugal casting *in sand-lined molds* produces a pipe which

Weathers Shocks and Bending Strains Both In Handling and Service

MONO-CAST pipe is at least 33 1/3% more RESILIENT than is required in the U. S. Government specifications. RESILIENCE is the term used to express the amount of work or energy which a pipe will absorb without breaking. The RESILIENCE factor is the square of the modulus of rupture divided by the modulus of elasticity.

WRITE FOR DESCRIPTIVE LITERATURE

AMERICAN CAST IRON PIPE COMPANY

BIRMINGHAM, ALABAMA

CHICAGO KANSAS CITY LOS ANGELES CLEVELAND
MINNEAPOLIS NEW YORK CITY SEATTLE
DALLAS SAN FRANCISCO

Water Meters Check Revenue Losses

Carthage, Mo.

THE water works of Carthage has always been 100 per cent metered. In 1932 the population was 10,000 and the average daily per capita consumption 70 gallons.—R. L. YARYAN, Cashier.

Concord, N. H.

A STEADILY increasing percentage of services metered in Concord has made it possible to prevent an undue increase in the per capita consumption of water and has even resulted in a slight decrease in the last three years. In 1900, when the population of Concord was 19,632, the services were 30.24 per cent metered and the average daily consumption was 103 gallons per capita. The population increased to 21,497 in 1910, with 57.24 per cent of the services metered and the consumption the same as in 1900. In 1920 the population was 22,167, the services were 68.02 per cent metered and the consumption had risen to 108 gallons per capita daily. In 1930 the population was 25,228, the services were 79.68 per cent metered and the consumption had risen to 117 gallons per capita daily. With practically the same population in 1932 and an increase in services metered to 81.33, the average daily consumption was reduced to 109 gallons per capita.—P. R. SANDERS, Superintendent.

A Convenient Test Rack for Water Meters

A UNIQUE and convenient test and display rack for water meters has been developed and has proved most useful in Dayton, Ohio. The test rack is set up on the first floor of the Water Department office building and, as shown in the accompanying illustration, a number of different makes of water meters are included, each one being installed in a Ford Copperhorn meter coupling, such as is used for installing water meters in vertical basement pipes. The five Copperhorns on the top row contain only blank pipes, since it is planned to replace these later with additional meters which this Department may desire to test. The large header pipes shown at the top and bottom are blanked off so that water is run through all the meters in series.

It is the purpose of the Department to use this arrangement in making a comparative test of the various makes of meters and also in showing interested citizens the different makes and types of meters used for domestic installations. In making up this test rack the type of meter coupling used was found to be a great convenience and saving in the number of couplings required, in the number of pipe fittings and permitting the meter to be removed or changed without disturbing.—W. W. MOREHOUSE, Superintendent, City Water Department.

Corvallis, Ore.

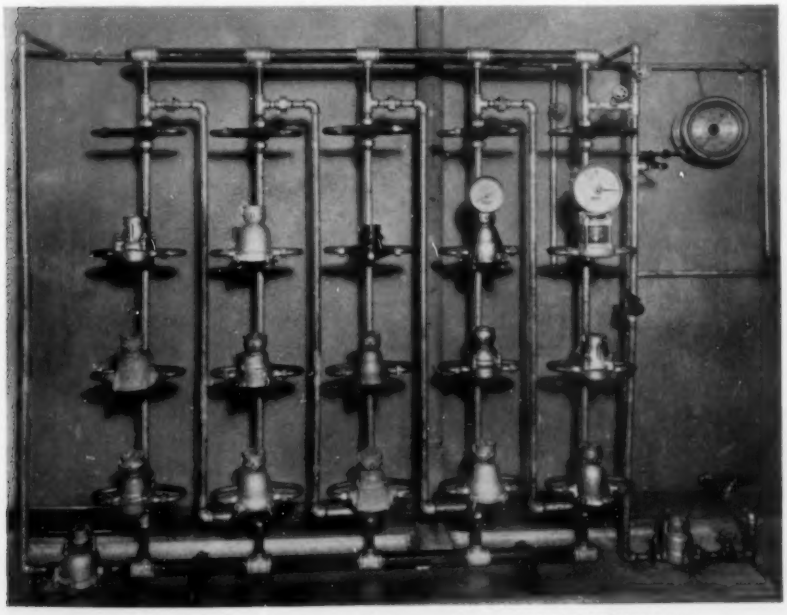
THE population of Corvallis in 1932 was 7,855. All services were metered and the average daily consumption was 115 gallons per capita. The actual saving which has been effected through metering is not known, since the system has always been 100 per cent metered, but it is known that without meters the available supply of water would not be sufficient and it would mean an increased supply costing many thousands of dollars more than the cost of the meters which now control the waste of water.—E. L. STRANGE, Superintendent.

Eugene, Ore.

THE record of water consumption in Eugene is an excellent example of the gradually increasing use of water in a system which has always been 100 per cent metered. When a system goes from flat rates to universal metering, there is invariably a tremendous reduction in the per capita consumption of the water, due to the elimination of wastage through faulty plumbing. In the case of a city which starts out with 100 per cent metering, the slight increase from year to year in per capita consumption is usually due to the installation of additional plumbing facilities because of the low cost of water when its sale is controlled by meter. The following table shows the population and consumption of water in Eugene, Ore., from 1919 through 1932:

Year	Gallons per Capita per Day	Average Population Served
1919	70	11,000
1920	95	11,000
1921	93	12,000
1922	96	13,000
1923	101	14,000
1924	115	15,500
1925	120	17,500
1926	124	20,000
1927	114	22,000
1928	111	23,000
1929	120	24,000
1930	160	19,000
1931	161	19,000
1932	159	19,000

J. W. McARTHUR,
General Superintendent.



THE METER DISPLAY AND TESTING RACK OF THE DAYTON, OHIO WATER DEPARTMENT

Providence, R. I.

CONTROL of the waste of water of three cities and two towns which are supplied by the Providence water works is well shown in the record of water consumption from 1900 through 1932. In this time a great improvement was effected in the Providence water supply through the installation of a new filtration plant. In 1900 the population served was 187,300, 82.6 per cent of the services were metered, and the average daily consumption was 54 gallons per capita. In 1910 the population served was 246,000, the services were 89.1 per cent metered, and the consumption was 63 gallons per capita. In 1920 the population was 270,470, the services were 94.5 per cent metered, and the consumption was 80 gallons per capita daily. In 1929 the population was 331,100, the services were 97.7 per cent metered, and the consumption had dropped to 76 gallons per capita daily. This was reduced to 75 gallons per capita daily in 1932, when the population was 332,050 and the services were 98.0 per cent metered.—S. C. CRAIG, Superintendent, Providence Water Works.

INCREASE *Pipe life*

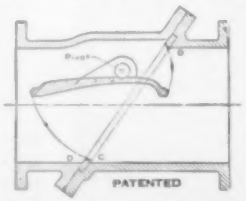
WITH *Chapman* NON-SLAM *Check valves*

Chapman Non-Slam Check Valves cannot slam. The *balanced disc* closes smoothly, quietly and quickly, due to the cushioning (and dampening) effect of the stream against the short flap of the disc.

As a result, Chapman Non-Slam Check Valves stop water hammer, eliminate dangerous vibrations and stresses, and greatly reduce maintenance costs by increasing the life of pipe lines and the life of the valves themselves.

Furthermore, the balanced disc rides steadily on the stream without fluttering when the valve is open. Excessive wear and frequent replacement of the hinge pins and bearings are eliminated.

There are many other outstanding features that make the use of Chapman Non-Slam Check Valves profitable. *Write for illustrated bulletin.*



The balanced disc, supported on two bearings, reduces head loss 75%, does not flutter, eliminates excessive wear.

THE CHAPMAN
VALVE MANUFACTURING CO.
INDIAN ORCHARD, MASSACHUSETTS

Uncompromising quality

No compromise with quality, no sacrifice to price, has ever been known in the manufacture of Niagara and American Water Meters. Quality has been the fundamental policy of the Buffalo Meter Company—since the first meter was built in 1893.

The gears of the Niagara and American Water Meter, for example, are protected from performance failure by their mechanical construction. Each gear has a tough bronze inner core, protected by an outside shell of pure chromium, preventing wear and corrosion.

The gears are supported on enclosed jewelled bearings, which are self-lubricated entirely without the use of oil. The entire construction is the simplest of any meter, yet does the work, lasts almost forever and is always sanitary. Oil-enclosed gear train is optional.

All other improvements found in the present-day Niagara and American Water Meters, are the result of forty-one years of constant effort to give the greatest value for the money expended—but at no time has quality been sacrificed to price.

To learn all the facts about Buffalo-Built Water Meters—send for the new Niagara and American Water Meter Catalog.

NIAGARA *and* AMERICAN
IRON CASE BRONZE CASE
Water Meters

BUFFALO METER COMPANY
2902 MAIN STREET BUFFALO, N. Y.

Water Meters Check Revenue Losses

Raton, N. Mex.

WHILE 100 per cent metering has not actually reduced the per capita consumption of water in Raton, it has greatly conserved the none too ample source of water, which was the main purpose of metering. The population of Raton was 6,500 in 1920, and 4 per cent of the services were metered. At that time the per capita consumption was 105 gallons daily. In 1930 the population had dropped to 6,300 and the services were 100 per cent metered. The average daily consumption was 110 gallons per capita. This increased to 115 gallons per capita daily in 1932, when the population had dropped to 6,000 and the services were still 100 per cent metered.—G. C. Culberson, Manager, Water Department.

Jamestown, N. Y.

CONSTANT increases in metering until 100 per cent was reached have resulted in a steady decrease in the average daily per capita consumption of water in Jamestown. The population of Jamestown was 22,892 in 1900, when the services were 12 per cent metered and the average daily consumption was 120 gallons per capita. The population increased to 31,297 in 1910, when the services were 50 per cent metered and the consumption was reduced to 101 gallons per capita daily. In 1920 the population was 38,898 and the services were 90 per cent metered. This brought a reduction in the consumption to 70 gallons per capita daily, which was reduced to 65 gallons per capita daily in 1930, when the population had increased to 45,172 and the services were 100 per cent metered. The latest figures available are for 1932, when the population was approximately 46,000, the services were 100 per cent metered and the per capita consumption was 61.40 gallons daily.—Melvin O. Swanson, Superintendent, Board of Public Utilities.

Raleigh, N C.

THE cost of operating the Raleigh water works has been reduced practically in the proportion in which metering has been increased. In 1910, when the population was 20,000, only 21 per cent of the services were metered. At that time the per capita consumption was 62 gallons daily. In 1920 the population had increased to 25,000, with 30 per cent of the services metered, and the per capita consumption had increased to 109 gallons daily. Steps were taken to increase the number of meters in the city, so that by 1930, when the population was 37,500, the services were 95 per cent metered. This resulted in the reduction of per capita consumption to 78 gallons daily. In 1932 the population was 40,000, the services were 100 per cent metered and the per capita consumption was 72 gallons daily. In 1933 the population was 40,000, the services were 95.68 per cent metered and per capita consumption was 68.5 gallons daily.—Joseph A. Whitman, Director, Utilities Division.

Newberg, Ore.

THE population of Newberg has been stationary at about 2,900 since 1930, and all services are metered. The average daily consumption per capita has been 60 gallons. Meters have cut down water waste tremendously, so that the city saves from 25 to 35 per cent of the water which was formerly delivered to the mains. It is impossible to present an actual cash saving, as the water rates were reduced 20 per cent, but the meters have saved a costly extension to the water supply.—J. F. Ridenour, Superintendent, Water Works.

Price, Utah

PRIOR to 1924 there were no water meters in Price. The charge was a flat rate of $1.50 per month per service, making a total charge of $18.00 per year. The present income averages $29.35 per service per meter. In addition to eliminating the waste of water, a complete metering of the city has increased the income per service by $11.35, which in one year equals the approximate cost of the meter. In 1920 the population in Price was 2,364, and there were no meters installed. The average daily consumption in 1920 is unknown, since no records are available. In 1930, when the population had increased to 4,084 and the services were 100 per cent metered, the consumption was 85 gallons per capita daily. In 1932 the population was 5,125, the services were 100 per cent metered and the consumption was 83 gallons per capita daily.—Alma Greenwood, Superintendent, Water Works.

Lynchburg, Va.

THE average cash saving to the Water Department of Lynchburg through reduced per capita consumption due to 100 per cent metering during the period 1920-1930 because of lower chemical consumption for purification purposes, was $300 per year. The present annual saving under existing prices and the rate of using chemicals is about $600. The greatest saving effected through metering, however, was the indefinite postponement of large expenditures for additional supply works. In 1920 the population of Lynchburg was 32,000, the domestic services were 12 per cent metered, the industrial services 100 per cent metered, and the average daily consumption was 142 gallons per capita. In 1930 the population was 42,500, universal metering was in force, and the consumption was reduced to 92 gallons per capita daily. In 1932, with a population of 43,000 and universal metering, the consumption had decreased to 86 gallons per capita daily.—Richard F. Wagner, Director, Public Safety and Water.

Spokane, Wash.

THE services of Spokane, Wash., have been 100 per cent metered since 1918, thus maintaining an adequate control over the water supply. In 1900, when the population was 36,848, none of the services were metered and the consumption was 183 gallons per capita daily. In 1910 the population had increased to 104,402 and with only two or three meters in the system the consumption had increased to 260 gallons per capita daily. In 1920, with a population of 104,437 and 100 per cent metering, the consumption had dropped to 190 gallons per capita daily. In 1930, however, owing to a low meter rate and the consumers realizing that their water bills were not increased by the use of meters, with 100 per cent metering the consumption had increased to 261 gallons per capita daily; the population was 116,010. With practically the identical population in 1932 and 100 per cent metering, the consumption was reduced to 217 gallons per capita daily.—A. Lindsay, Superintendent of Water.

Wausau, Wis.

IN 1917, prior to the adoption of meters, the pumpage of water in Wausau amounted to 1,320,011,855 gallons for 2,984 services, as compared with 818,441,518 gallons for 4,776 services in 1931. Inasmuch as it cost $15 per million gallons for purification, the saving on this item alone has been $7,500 annually. In 1910, when the population of Wausau was 16,560 and there were no meters, the average daily consumption was about 200 gallons per capita. In 1920, when 43 per cent of the domestic services and 100 per cent of the industrial services were metered, and the population was 18,661, the consumption had been reduced to 109 gallons per capita daily. This was still further reduced to 95 gallons per capita daily in 1930, when the population was 23,758 and the domestic services were 88 per cent and the industrial services 100 per cent metered. In 1932, with the same population and 90 per cent of the domestic services and 100 per cent of the industrial services metered, the per capita consumption was 96.6 gallons daily.—Emil Flatter, Superintendent.

Gillette, Wyo.

THE saving per month in Gillette since metering was completed has been about $175 in current used for pumping, and at the same time the water revenue has increased approximately 25 per cent. Gillette has a population of 1,400, 98 per cent of all services are metered, and the average daily consumption is 105 gallons per capita.—J. E. Jennings, Superintendent, Light and Water Department.

Fifty thousand concrete tetrahedrons produced daily, for use in Mississippi River flood control. Nested steel forms filled twice a day with 'Incor' Concrete from two paving mixers operating in tandem

6¾ Million Concrete Pyramids to Keep Ol' Man River in His Place

'Incor' Cement Enables Contractor to Fill Forms Twice Daily . . . 60% to 80% reduction in curing time lowers costs, assures steadier employment

Interesting both as an engineering problem and as a further demonstration of the operating advantages of high-early-strength cement, is the use of concrete tetrahedrons, by U. S. Army Engineers in Mississippi River flood-control operations below Memphis. These four-plane, triangular-shaped units, 12 inches in height, are dumped from barges at rates determined by laboratory experiment, based on barge speed, river current and water depth. Any face of a tetrahedron is the 'bottom,' so whichever way they fall they stay put, low center of gravity assuring great stability. Space between blocks fills with silt, forming an integral bank-paving to keep Ol' Man River in his proper place.

Contract requiring casting and loading on barges of 50,000 units daily on a total order of 6,780,000, was awarded last November to Simons-Mayrant Company, Charleston, S. C. Forms were designed to permit the use of paving mixers and highway-construction methods. When concrete hardens, the individual steel forms are lifted, turned upside down, and the blocks, released by hammer tap, stored alongside casting bed for curing.

Forms Used Twice Daily

By using 'Incor' 24-Hour Cement, the contractor fills forms twice daily and units are delivered to Government barges in 48 hours or less. Average 48-hour strength of 81 cylinders of 'Incor' concrete used on this job is 3166 pounds per square inch; specifications require 2000 pounds at time of delivery.

'Incor', a *better* Portland Cement, produces service-strong concrete in 24 hours. Sixty to 80 per cent reduction in curing time brings many important advantages in concrete work of all types and kinds. On P.W.A. and C.W.A. jobs, 'Incor' means steadier employment for labor—no lay-offs waiting for concrete to cure. While concrete hardens, someone always loses.

'Incor'* is made by producers of Lone Star Cement, subsidiaries of International Cement Corporation, New York, and sold by leading cement manufacturers.

* Reg. U. S. Pat. Off.

'INCOR' 24-Hour Cement

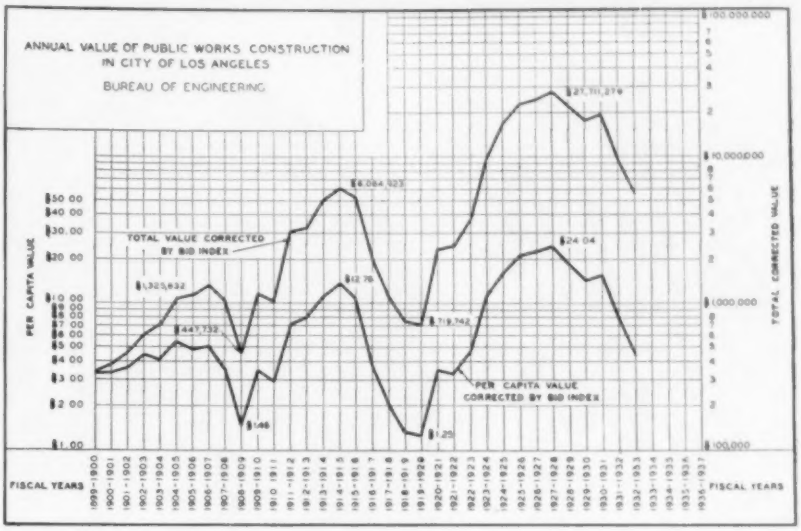
Highways. Bridges. Air Transport

The Cyclical Nature of Public Works

THE chart reproduced at the top of this page shows the annual value of public works construction in the city of Los Angeles and indicates very clearly the cyclical nature and wide swings of public works construction. It portrays visually the reason for the serious problem confronting the Technical Divisions of the Bureau of Engineering in adjusting the number of its personnel to current rates of activity. The decline from 1906 to 1908 amounted to 67 per cent, which was followed by an advance of 1,255 per cent to 1915, a decline of 88 per cent in 1920, and an advance of 3,750 per cent to 1928. The decline from 1928 to date has amounted to 80 per cent.

The lower curve on the same chart shows the per capita value of annual improvements and illustrates the continuous long-time rise in the public demand for improvements independently of the increase in population of the city. In other words, the standard of living, as far as public improvements is concerned, has increased steadily, just as has the standard of living in the matter of private expenditures.

The chart at the bottom of the page shows the index of average annual bid prices of public works in the city of Los Angeles from 1900 to date, which is a carefully weighted average of a sufficient number of types of public improvements to constitute an index for all classes. It can be seen that there has been a wide variation in the purchasing power of the public works dollar during the period, having ranged from 72 cents in 1916 to $1.44 in 1920. This index has proved to be very useful in converting the actual dollar value of public works completed, or value of orders on hand, to a figure expressed in dollars of constant purchasing power, in other words to the volume of physical work.*—J. J. JESSUP, City Engineer.


ANNUAL VALUE OF PUBLIC WORKS CONSTRUCTION
IN CITY OF LOS ANGELES
BUREAU OF ENGINEERING
TOTAL VALUE CORRECTED BY BID INDEX
PER CAPITA VALUE CORRECTED BY BID INDEX
PER CAPITA VALUE
TOTAL CORRECTED VALUE
FISCAL YEARS

* A more complete description of the derivation of the index is given on page 95 of the Annual Report of the Board of Public Works of Los Angeles for the fiscal year 1930-1931.

Oklahoma County Adopts Creosoted Timber Bridge Standards

TULSA COUNTY, OKLAHOMA, is completing the construction of a county highway, which includes the use of its new standard creosoted timber trestle of H-15-ton truck design. This work is on the North Cincinnati road adjacent to the city of Tulsa and involves interesting hillside location in addition to the bridge work.

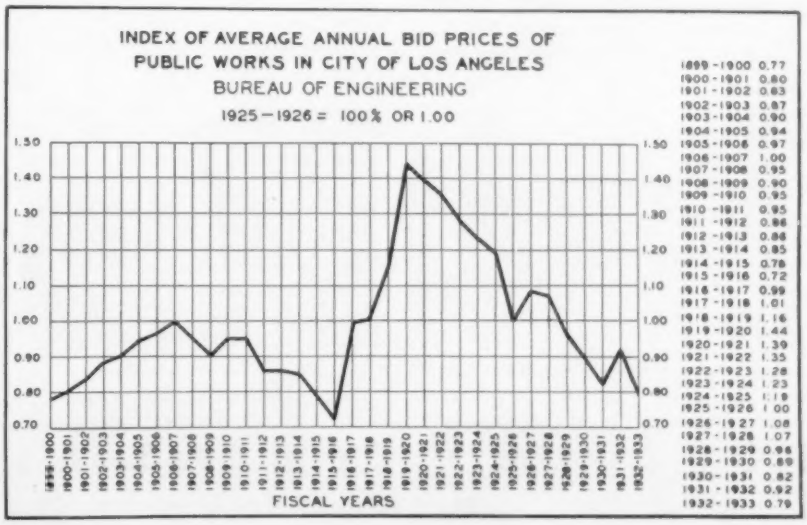
The pressure creosoted bridge standard adopted by the county provides for 21-foot spans with a roadway of 22 feet supported by 5-pile bents. The bents are capped with 12 x 12-inch timbers to carry twelve 6 x 16-inch x 22-foot stringers in each span. A laminated floor of 3 x 4-inch x 22-foot material, surfaced on one side and one edge, is built thereon with 3 x 6-inch scupper blocks and 6 x 6-inch felloe guards. A heavy hand-rail on 6 x 6-inch posts completes the superstructure. The posts are pressure treated, but the hand-rail is placed untreated and is painted white.

Instructions provide that all bolt holes and cuts made in the field shall be carefully treated and the pile heads roofed. Structural grades of timber are specified throughout. Only structural square edge and sound southern yellow pine or select structural Douglas fir is accepted for stringers. The treated timber floors are covered with bituminous mastic surface to protect them from wear and to conform to the usual road surface.—S. K. MCCLELLAND, County Engineer.

Federal Air Transport Policies to Be Coordinated

THE organization of an Interdepartmental Committee on Air Transport System, to coordinate Federal policies with respect to air transportation in the United States, has been announced by the Department of Commerce. The committee was formed under the sponsorship of the Secretary of War, the Postmaster General and the Secretary of Commerce. Eugene L. Vidal, Director of Aeronautics of the Department of Commerce, is Chairman of the Committee. Harllee Branch, Second Assistant Postmaster General, is the Post Office Department representative, and Major General Benjamin D. Foulois, Chief of the Army Air Corp, is the War Department member.

All matters pertaining to the air transport system in the United States which may affect two or more of these departments will be referred to the Committee.



CEMENT BOUND MACADAM

with C.W.A. Labor

USE THE TOOLS YOU HAVE!

● *Broken brick piled up for coarse aggregate on a Savannah, Georgia project. In this project relief labor was employed to break up the brick of the old paving which, mixed with a small amount of crushed stone, served as the aggregate for the new cement bound macadam.*

● *Spreading and hand-tamping coarse aggregate (gravel), King St., Northumberland, Pa.*

C. W. A. Labor can build Cement Bound Macadam. The equipment is simple—all shown on this page. Most city street departments have everything needed.

Build Cement Bound Macadam now—get the best low cost rigid pavement for light traffic streets, widening jobs, parking areas, roads. Write for information—*free.*

● *Grouting operating on widening project—Hylan Blvd., Staten Island, New York*

● *Rolling after grouting—Youngstown, N. Y.*

● *General View—Showing burlap drag in final finishing operations—Roselle, N. J.*

PORTLAND CEMENT ASSOCIATION

Room 233—33 West Grand Ave., Chicago, Ill.

Mention THE AMERICAN CITY—it helps.

Sewerage and Sewage Disposal

Educational Campaign to Sell Sewage Treatment

THE protection of public health through warfare on disease, improvements and enforcement of food laws, sanitation and its relation to public health constitute one of the most important services of the press. Nobler in effect than any of the crusades of the Middle Ages are the efforts that the American papers put forth against disease and the promotion of correct sanitary conditions. The setting-up of an educational campaign in the average city that is interested in sewage treatment is a very important and serious step in the development of a sewage treatment project. After all, the voters control the outlet and destiny of engineering talent. Without the support of the public, there is no work to be done.

The city of Galesburg, Ill., which organized a sanitary district under the State Law of 1917, is a typical case of how public opinion can be reversed on matters pertaining to public health when the citizens are actually aroused concerning the importance of the project. This community opposed the formation of the sanitary district by quo warranto proceedings, but the Court upheld the district. Galesburg is a city with three newspapers, and prior to voting on the bond issue an educational campaign was designed to make it possible for every individual to become acquainted with the facts surrounding the sewage treatment project. The titles of a few of the editorials used in this campaign were: "Civic Progress Dates from Installation of Modern Disposal Plant Methods"; "A Good Work Started"; "The Sanitary District"; "Real Sanitation"; "There Should Be No Delay"; "The Sanitary Bond Issue"; "Time's Up"; and "Let the Bugs Do It."

The titles of several of the articles used in this campaign were: "Will Vote on November 24 on Sanitary Bond Issue"; "Citizens to Boost $700,000 Bond Issue for Cedar Creek Improvement"; "Dream of Galesburg May Be Realized by Big Improvement of Cedar Fork"; "Sanitary District Trustees Give Facts"; "What the Construction Program of the Sanitary District Will Mean to You and Our City"; "'Know the Facts, Don't Guess,' Say the Trustees"; "Trustees Tell of Construction Program of Sanitary District."

Addresses were also given before the Chamber of Commerce, five luncheon clubs, the Izaak Walton League and the Civic Department of the Woman's Club. These addresses covered a period of eight days, and the articles in the newspapers covered a period of twelve days. It goes without saying that the newspaper editors of this community were solidly back of the program. The people of the community supported the bond issue, and last spring the Galesburg sewage treatment works were officially dedicated, with the newspaper editors taking a very prominent part in the program of dedication, ready and willing to sell continuously the importance of sewage treatment as related to public health.

—From a paper by Gus H. Radebaugh, Manager, Urbana and Champaign Sanitary District, Urbana, Ill., presented before the sixth annual convention of the Central States Sewage Works Association.

Sewage Treatment Works for Separate Sewer Systems

IN cities with separate sewer systems excessive ground and storm water may limit the normal capacity of the works or may be detrimental only during storms, depending upon whether it is due to infiltration into sewers laid below permanent ground-water elevation, or is caused by cellar drains, roof water connections, street inlets and other previously mentioned defects of the sewer system.

Excessive rates of flow at the treatment plant due to continuous high ground-water infiltration are manifestly undesirable limiting factors for pumping equipment and pipe lines connecting the various units, for such flows limit the designed capacity of these structures for increasing sewage flows in the future. These excessive flows likewise increase velocities through sedimentation tanks, with corresponding decrease in efficiency. As the organic content of ground water is relatively low, the effect on biological processes is relatively slight other than in the activated sludge process, where the results attained bear a relation to the period that the sewage is in contact with the activated sludge.

The sudden increases of flow due to storm discharges of roof and cellar drains, perforated manhole covers, etc., not only detrimentally limit the normal capacity of the plant, but may also seriously disturb biologic processes.

Recently developed equipment, capable of carrying considerable overloads, has been helpful in overcoming the effects of such sudden increases in flow. For example, mechanically cleaned settling tanks equipped for frequent or continuous removal of sludge are more effective than the old-fashioned single-story tanks where increased velocities of flow tended to stir up settled solids and carry them over the outlet weirs to the detriment of subsequent treatment processes. Sustained high storm flows lock sewage siphons, dosing sprinkling filters so that discharge from the nozzles may be at maximum rate for several hours' duration. This continuous flushing tends to wash the film from the stones and interferes with nitrification. In the final settling basins the increased velocities of flow reduce settling efficiency, as in the primary settling tanks.

In the activated sludge process the sudden change in velocity of flow through aeration and final settling tanks may cause serious disturbance in performance, with marked deterioration in quality of the effluent.

Unless the designing engineer has full knowledge of storm-flow conditions and makes adequate provision in the design, the value of the plant is materially reduced. While the overload can be removed by installation of overflows, as is customary in treatment works for combined sewer systems, such overflows are often procedures of doubtful expediency, for the dilution of organic matter during storm flows in a separate sewer system is much less than in a combined system, and diversion of this excess flow is more apt to cause an active nuisance or a menace to health. It is probable that one of the best procedures in such a case would be to install additional preliminary treatment capacity so that all the sewage would receive at least minimum treatment before discharge into the stream.

—From a paper by C. A. Emerson, Jr., of Fuller and McClintock, consulting engineers, New York, presented before the seventh annual conference of the Pennsylvania Sewage Works Association.

The Transmission of Heat in Sewage Sludge

AS a result of experiments carried on at Pennsylvania State College, certain data were secured which can be successfully applied to the design of a sewage sludge tank heating system. If the tank is well insulated, the region of active digestion apparently is a function of the total height of the sludge in a tank and is located at about 50 to 60 per cent of the sludge height from the bottom of the tank. It is unwise to place heating coils in a region higher than 60 per cent of the sludge height from the bottom, because they are ineffective in supplying heat to aid digestion. Furthermore, the viscosity of the supernatant liquor is quite low and the tank heat losses would be increased. The second bank of tubes should be placed in the 35 to 50 per cent height region, and the third bank in the 25 to 35 per cent height region. Because of the high viscosity and poor convectional heat transfer in sludge, the heating coils should be spaced about 15 to 24 inches upon centers both horizontally and vertically. Sludge heating in the region below 25 per cent would be useless because of the inertness of this material. Furthermore, the digested sludge in the bottom of the tank serves to limit the heat loss through that part of the tank.

With the heating water temperature around 130 to 140 degrees F., the heating coils will remain quite free from incrustation. Using water as the heating medium, the heating requirements can be varied to meet the climatic conditions by a variable speed circulating pump.

—From a paper by E. R. Queer, Engineering Experiment Station, Pennsylvania State College, State College, Pa., presented before the Seventh annual conference of the Pennsylvania Sewage Works Association, and published in full in the *Sewage Works Journal*, November, 1933.

MATHIESON
Liquid Chlorine

YEAR AFTER YEAR scores of America's most progressive cities specify Mathieson Liquid Chlorine for water purification and other municipal sanitation jobs. This wide preference for Mathieson Chlorine is based not only on the high purity of the product but on the minute attention to detail that marks every phase of Mathieson service.

Cylinders are kept scrupulously clean to guard against any accumulations which might lower the purity of shipments or interfere with the operation of chlorinating equipment. All valves, threads and other parts are frequently inspected, cleaned and tested to keep them in perfect working condition.

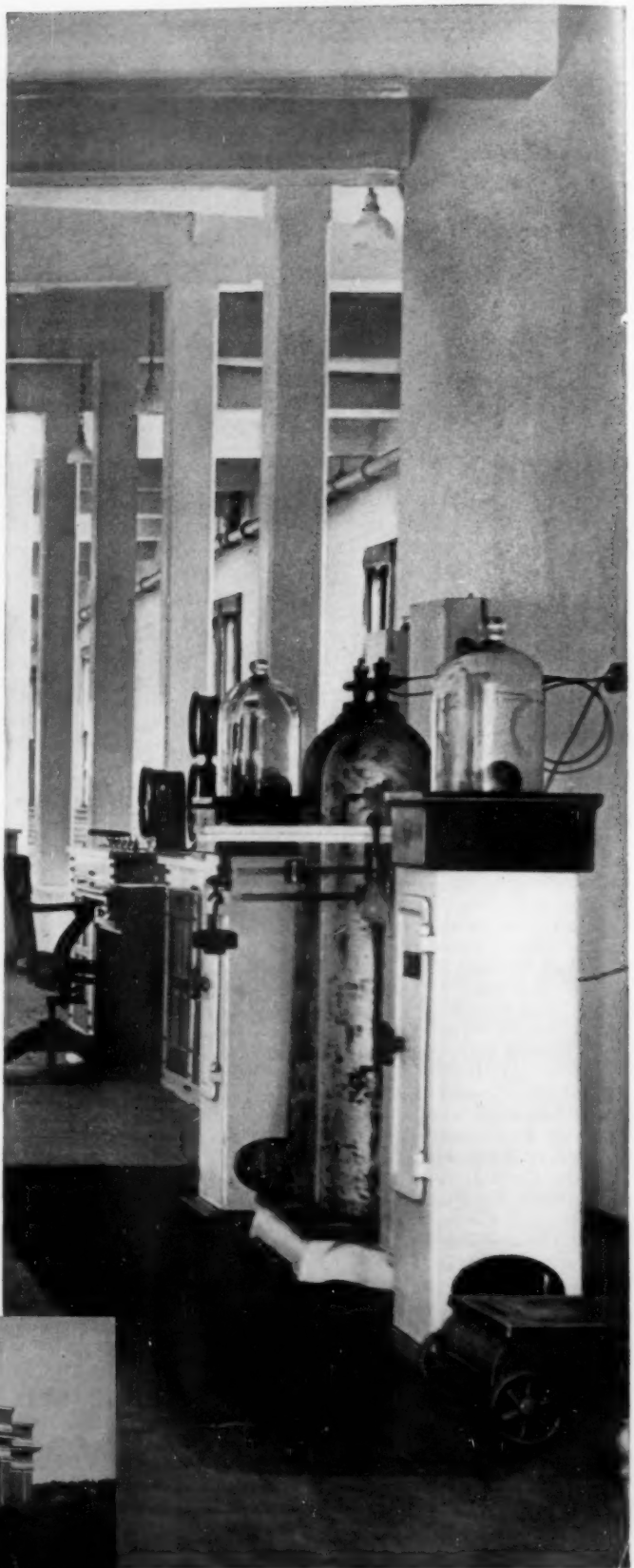
Nothing more than you have a right to expect...these routine precautions, but Mathieson performs them with such unfailing regularity that they become a tangible advantage of Mathieson service.

A pioneer producer of Chlorine and other industrial chemicals, the Mathieson organization includes an experienced technical staff. You are invited to consult with us at any time on municipal sanitation problems, or on any other problems involving the use of Mathieson products.

The* MATHIESON ALKALI WORKS *(Inc.)

250 Park Avenue, New York, N. Y.

Soda Ash...Liquid Chlorine...Bicarbonate of Soda...HTH and HTH-15...Caustic Soda...Bleaching Powder...Ammonia, Anhydrous and Aqua...PH-Plus (Fused Alkali)... Solid Carbon Dioxide...CCH (Industrial Hypochlorite).



● ABOVE: *Interior of filter plant at the Evanston, Ill., Water Works, showing chlorinator and cylinder of Mathieson Chlorine.*

● LEFT: *Exterior view of Des Moines, Iowa, Municipal Water Works. Another progressive city that specifies Mathieson Chlorine.*

Refuse Collection and Disposal

Collection Costs in 1931, 1932 and 1933 in Peekskill, N. Y.

THE village of Peekskill purchased in 1928 three 2-ton Selden open type dump-trucks, equipped with sideboards and having a maximum capacity of 8 cubic yards, for the collection of garbage, ashes and rubbish. One of these trucks was replaced in April, 1933, by a 2-ton Dodge truck equipped with a closed steel body having an automatic loading device manufactured by the Elgin Corporation. Reduction in labor costs during 1933 as compared with 1932, and shown in the table, amounting to $2,763, was due to two factors: a reduction in the working hours of the entire crew from 48 to 44 hours per week; and the reduced number of men required to operate the Elgin Garbage-Getter. Two men, including the driver, are used instead of four men as with the open trucks. Both of these changes became effective in April, 1933, so that the savings shown occurred only during the last nine months of the year.

The population served is about 18,000. In the residential districts collections are made once each week except during the summer months, when two collections are made. The business districts are served daily all year round. All material collected, amounting to between 8,000 and 9,000 tons per year, is hauled to a dump, where the combustible part is burned.

The garbage collection department now employs three chauffeurs and seven laborers on the trucks, three carry-out men, who, working in advance of the trucks, place the cans on the curb and later carry back the empty cans, and one laborer at the dump. There have been no changes in the rate of pay of any of the employees during the last three years. The laborers receive $4.50 for 8 hours' work and the chauffeurs $5.50. Chauffeurs do no repair work on their trucks, but handle the greasing, oiling, cleaning, etc., and report this on their weekly service record sheets.

COMPARISON OF COSTS OF COLLECTION OF GARBAGE, ASHES AND RUBBISH IN THE VILLAGE OF PEEKSKILL DURING 1931, 1932 AND 1933

	1931	1932	1933
Labor	23,475.00	23,566.00	20,803.53
Compensation insurance	1,173.00	2,229.33	1,481.21
Gasoline and oil for trucks	749.29	657.63	638.07
Truck repairs and supplies	2,001.04	838.79	848.84
Truck insurance (P. D., P. Lia., Fire)	287.70	287.70	233.69
Truck depreciation 3 @ $400.00	1,200.00	1,200.00	1,200.00
Total	28,886.03	28,779.45	25,205.34

DAVID G. MILLER,
Commissioner, Department of Public Works.

Five Per Cent of City Budget Paid for Refuse Disposal

NEARLY one million dollars, or about 5 per cent of the total cost of the general city government of Los Angeles, Calif., is spent every year for the collection and disposal of refuse, under the direction of the Bureau of Engineering of that city. The Refuse Collection Division operates six days a week, and enough men are provided to compensate for a five-day week for all the personnel employed. The personnel consists of 1 superintendent, 5 foremen, 6 clerks, 1 auto machinist, 2 blacksmiths, 2 blacksmith's helpers, 402 day drivers and loaders, 58 night drivers and loaders, and 2 skilled laborers, a total of 479 men.

The municipal incinerator is operated 24 hours a day, enough men being provided to compensate for a five-day forty-hour week. The total personnel employed at the incinerator consists of 1 superintendent, 1 labor foreman, 3 clerks, 1 truck driver, 1 tractor operator and 18 laborers. To supplement this personnel, an average of 15 men are furnished daily from the city chain gang.

Garbage and incombustible rubbish are collected by city forces throughout the city except in the outlying communities of Eagle Rock, the San Fernando Valley, Venice, San Pedro, and Wilmington, where collection is made by contractors who are paid by the city. Whether collected by the city or by contractors, the garbage is fed to hogs, which has been found to be the most economical method of disposal for Los Angeles. The garbage collected from the city proper is loaded on railway cars and shipped to a hog ranch 55 miles distant. About 450 tons of garbage is shipped every day and constitutes a large part of the food supply for about 53,000 hogs.

During the past year, the price of hogs has been so low that the city has received very little revenue from the sale of garbage, for, in accordance with the terms of a supplemental agreement entered into with the Fontana Farm Co., when the price of hogs is less than 6.5 cents per pound, no revenue is received; when the price of hogs is from 6.5 to 7.5, the city receives 50 cents per ton of garbage; and so on, to a maximum of $1.00 per ton when the hogs bring 11 cents or over.

Garbage is collected by 56 mule teams in the close-in area, and by 58 motor trucks in the more distant areas. The frequency of collection varies from twice weekly for residences to daily for large hotels, restaurants and hospitals. Garbage is collected in the morning, starting at 6:30, except that the congested areas are collected at night. The trucks travel a total of about 3,000 miles per day. One man acts as driver and loader on the mule teams, while the truck crews consist of one driver and two collectors.

Three motor trucks are used for the daily collection of dead animals, which are sold to a fertilizer manufacturing company for $25 a month. About thirty motor trucks are used in collecting tin cans and incombustible rubbish. Since November 7, 1932, incombustible rubbish has been collected every second week. Prior to that time it was collected every week. The reduction in the frequency of collection has resulted in a substantial saving per month. The nonbustible rubbish is dumped into an abandoned gravel pit. The city pays $1 per load for dumping privileges.

A majority of the garbage trucks are of the 2½-ton, 6-wheel type, 24 new trucks of this type having been purchased during the past year. The sides and rear end of the steel garbage tanks, or truck bodies, slope outward and have a level full capacity of about 5 cubic yards.

The majority of the non-combustible-rubbish trucks are of the conventional 3-ton, 4-wheel type, most of them previously having been garbage trucks. The bodies are of steel construction with a capacity of about 13 cubic yards. The trucks are equipped with hydraulic hoists, and dump through the rear gate.

Combustible rubbish is collected by private contractors and burned at the municipal incinerator, for which the city makes a charge of $1 per ton for burning. The incinerator was built by the Nye Odorless Crematory Co., and has been in operation since August, 1927.

J. J. JESSUP, City Engineer.

THE NEW GARBAGE-GETTER AT PEEKSKILL, COLLECTING IN FEBRUARY, 1934

NEWS *For Every Public Official*

Actual Size

An Automatic Electric Fire Alarm Unit for Public Buildings

Gamewell VITALARM Signal

Now, every municipal building can have reliable automatic fire alarm protection in convenient form.

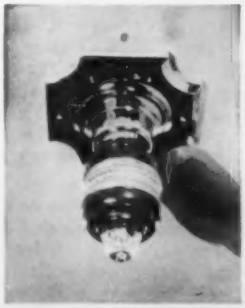
This new automatic fire alarm unit known as the Gamewell VITALARM Signal, can be plugged into any standard light socket. It has *two* detectors and a loud alarm howler in the one unit. It operates on the two best known principles of automatic fire alarm, having both the "rate of rise" and "fixed" thermostats. Catches the fire quickly and surely—frankly, it is an amazing device for discovering fire and arousing the occupants of any building.

The life hazard in public schools, hospitals, institutions and auditoriums can be greatly reduced through the installation of the VITALARM Signal. Other public property and records can be protected also by equipping city halls, libraries, garages, water works, fire and police stations, etc.

Every municipal official should become acquainted with the VITALARM Signal—a product of the world's leading fire alarm manufacturer. We'll be glad to mail you complete descriptive literature.

THE GAMEWELL COMPANY
Newton, Massachusetts

Typical Installations



Traffic – Police – Fire

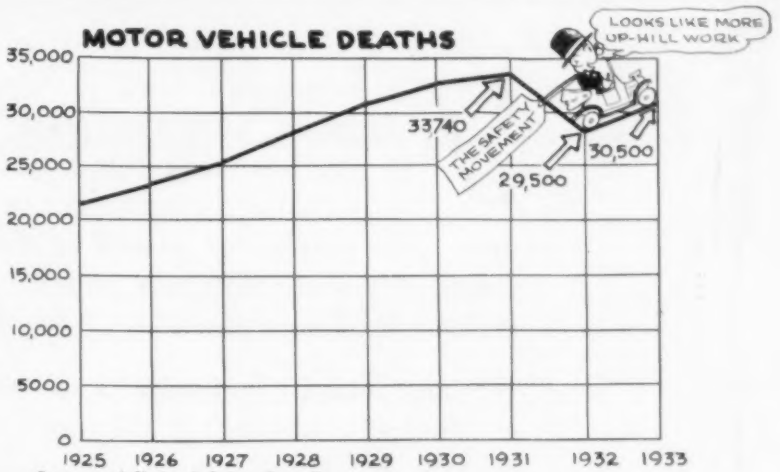
Motor Vehicle Accidents in 1933

IT is estimated that in 1933 there were 30,500 motor vehicle deaths—1,000 more than in 1932; this remaining otherwise, however, the lowest number since 1928, when 27,996 deaths occurred. These figures, with many other statistics of interest, are given by the National Safety Council, Inc., in *Public Safety* for February.

All the motor vehicle death rates increased in 1933—per 100,000 population, per 100,000 motor vehicles, per 10,000,000 gallons of gasoline consumed; but cities had a 1933 population death rate of only 16.9—30 per cent below the country-wide average. "In the first six months of the year gasoline consumption was 3 per cent below the same period of 1932, and motor vehicle fatalities dropped 7 per cent. During the last half of the year, however, consumption increased nearly 3 per cent, and deaths shot up 12 per cent. . . . Motor vehicle deaths per unit of travel have always been higher during the last half of the year."

Among the largest cities, Milwaukee had the lowest rate—11.9 deaths per 100,000 population. Boston is second, with 13.8, and New York City third, with 14.1. The rate in Providence, R. I., 8.1, is less than half the average for other cities of its size. Grand Rapids, Mich., with 5.1, had only a third of the rate for the group average.

"Since there are about 35 non-fatal injuries for each motor vehicle death, the injury total for 1933 may be estimated at more than a million. The economic loss from these injuries and deaths (including wage loss, medical expense, and overhead insurance costs) may be roughly estimated at $640,000,000. Property damage costs, though not definitely ascertainable, are probably equally large."



Courtesy of National Safety Council

DOWN A BIT—THEN UP AGAIN

Better Police Administration

FORWARD - LOOKING police and other governmental officials throughout the country are planning new steps and safeguards in the catching of criminals, according to the March *Police Chiefs' News Letter*, official publication of the International Association of Chiefs of Police.

City and county police officials of Minnesota were called together by the Governor recently to confer on the kidnaping menace. The Governor of this state recommends state-wide registration of residents as one means of combating the growing menace. He also recommends use of the aviation squadron of the Minnesota National Guard whenever feasible. An advisory and executive police council should be appointed for the purpose of deliberating on police affairs and coordinating the several police agencies for concerted action against roving criminals, says the Attorney General of Massachusetts. This council, he suggests, should consist of the state commissioner of public safety, the captain of the metropolitan district police and the heads of three city or town police departments.

A bill to compel persons convicted of a felony to register with police immediately on coming to a city is favored by the District Attorney of Rochester, N. Y. The New York City Police Commissioner plans to organize the department along the lines of the general staff organization of the Army. He plans also to have face-to-face conferences between representatives of the Police Department and the public in all parts of the city, in the hope of lessening the gap between the people and the police.

Inquiry into ways of the Royal Canadian Mounted Police will be made by a commission from this country shortly. Study of the methods, tactics and organization of the mounties will be made, perhaps with a view to recommending the formation of a similar force in some sections of the United States.

More Than Putting Out Fires

EMPHASIZING the fact that throwing water and extinguishing fires is not the only nor the most appreciated function of a modern fire department, the Industrial Commission of Wisconsin in a recent bulletin says:

"The firemen's first duty is to rescue people from burning buildings. Firemen practice to carry people down ladders, lowering them by ropes and holding life nets for those who must jump.

"Getting people out who are unconscious is only half the battle. Firemen are taught to resuscitate those overcome by smoke, fumes, gases, electric shock or water. In every fire company there should be some members trained in hand resuscitation methods.

"They are also taught to use the oxygen inhalator in cases mentioned above, in infant cases, pulmonary troubles, carbon-monoxide poisoning, and other physical troubles and diseases. Physicians often call them.

"In his battle against fire, a low loss is the chief's aim, whether that loss be by water, smoke or flame. The department carries tarpaulins to cover furniture in homes, merchandise on tables and shelves, and costly machines in shops and factories. The tarpaulins are used to form basins to catch water and troughs to run water outdoors or down shafts and stairways where it will do the least damage.

"Firemen do not fight fire from the street. They enter buildings and locate the fire and aim to prevent its spread. If smoke and gases make fire fighting difficult, they ventilate to remove them.

"Realizing that usually water causes more damage than flame, they use hand pumps or small hose lines, if possible, to put out the fire, backed up by larger lines to be used in case of need.

"Opening doors and windows and cutting ventilation openings in roofs is done with the least possible damage and with a view to easy repair.

"An important saving of loss begins when the fire is out. Water and debris are removed from floors to prevent further damage, window and roof openings are closed to keep out rain and snow, fire is started in the heating plant to dry things out, water-soaked goods are separated from the dry, and everything left in clean and presentable shape. In covering roof and window openings tarpaulins are handy; also tar paper.

"The modern chief looks for the cause of the fire or fires. Either he or someone designated by him makes an immediate and close investigation of the fire and preserves all evidence of incendiarism and assists in the prosecution of the arsonist who sets fires for profit or revenge."

THE technical staff of Guggenheim Brothers, after two years' intensive work, has developed a chemical process for the treatment of raw sewage. All putrescible matter is disposed of completely and effectively and the resulting effluent is of high purity.

We have recently concluded a six months' test on domestic sewage at the rate of 28,000 gallons per day. The results obtained have confirmed our belief that the process will have a wide range of application in the solution of sewage disposal problems. It is economical to install, is simple to operate and its effectiveness has been demonstrated.

The process is fully protected by patents and is ready for large scale application.

● *To demonstrate further the process, Guggenheim Brothers offer, at their own expense, to design, construct and operate a complete plant of 1,000,000 to 3,000,000 gallons daily capacity for some municipality.*

● *Such municipality will agree, in turn, to take over the plant and make payment therefor upon adequate proof that the plant performs up to a set standard.*

We shall be pleased to hear from municipal officials and consulting engineers to whom such a proposal may be of interest.

GUGGENHEIM BROTHERS
120 Broadway New York, N. Y.

MARCH, 1934

Vol. XLIX, No. 3

The American City

470 Fourth Avenue
New York

35 Cents, $2 a Year

With Victory in Sight, Must We Beat a Retreat and Balance the Budget?

THE analogy between a great war and a great depression needs emphatic restatement in the present crisis of the fight for prosperity.

When a year ago a new Commander in Chief was inaugurated, we had high hopes that he would lead us to speedy victory. He took prompt and courageous measures to that end. During his twelve months of almost autocratic power, he has captured to a remarkable degree the public confidence essential to ultimate success. But the war against want, like many a military campaign, has cost more and lasted longer than optimists predicted.

Now, with victory in sight, many of the President's ardent supporters are deeply concerned at his seeming hesitancy to push vigorously forward. They learned with amazement that CWA forces were ordered to begin demobilization during one of the bitterest winter months in the country's history. They see week after week dragging by without any hopeful sign from the Administration that new PWA funds, to the extent of the $2,000,000,000 or more essential for victory, are to be asked from Congress.

The only conclusion that these friends of the President can draw is that he knows what he is doing, and that his campaign is deliberately planned to elicit a mandate from the people so unmistakable as to assure the voting of the huge funds still needed for the winning of the war. The alternatives are clear. Before Congress adjourns the United States must choose between early prosperity through a temporarily unbalanced Federal budget, or continued unemployment with inevitable increase in the number and seriousness of unbalanced municipal budgets.

The implication, likewise, is plain. Municipal officials and other local civic leaders can perform no more urgent or patriotic service than to let the President and their Senators and Representatives know, promptly and plainly, that they regard the restoration of prosperity during 1934 as of vastly greater urgency than an early approach to a technically balanced Federal budget.

If the Commander in Chief has any doubt of the attitude of his army, now is the time to pledge allegiance to a call of "Forward March!"

Tax Relief for Real Estate

THE current agitation for "relief for real estate," unless more wisely led than is the case in most states and cities, will have serious results even for its proponents. If tax reduction is made possible by indiscriminate slashing of budgets,—by impairing the efficiency of water-supply and police and fire and health departments, or by such other false economies as the closing of playgrounds and the crippling of the schools,—the very foundations of real estate values will be weakened or wrecked. On the other hand, if relief is sought through a shift in the incidence of taxation, the problem needs more careful and public-spirited study than it has generally had.

With a laudable desire to help distressed property-owners, but with inadequate consideration of how best to do it, many municipal officials are advocating enactment of general sales tax legislation, the proceeds to be so apportioned as to reduce local real estate taxes. If the purpose is to lower the total taxes of the more wealthy property-owners, perhaps a two per cent tax on all retail sales—including food and clothing, as is proposed in bills now before the New York and New Jersey Legislatures—would accomplish the purpose. But if rent-payers or small-home owners are the expected beneficiaries, the results would be most disappointing. Obviously, a general sales tax bears much more heavily on wage-earners and small merchants, who must spend most of their income on commodities, than on their wealthier townsmen whose surplus buys investments or personal or professional services. A sales tax, moreover, is a serious drag on the revival of prosperity on which our general welfare now vitally depends.

An Unnecessary and Backward Step in Taxation

The results of a nation-wide investigation, financed by the Rockefeller Foundation, directed by Robert Murray Haig, McVickar Professor of Political Economy of Colum-

bia University, and carried out by a staff of economists headed by Prof. Carl Shoup of the School of Business, were made public on February 12. The study, said to be the most exhaustive of its kind yet made, embraced twenty-seven states, including the eighteen in which the sales tax is in effect.

The final conclusions are set forth in the following summary written by Prof. Shoup and concurred in by his associates:

"In common with most professional students of taxation in this country, the writer has had an unfavorable opinion of the sales tax, although he has not believed it to be by any means unworkable or impracticable with respect to raising considerable amounts of revenue. The results of the present study have caused him to favor the tax even less than before, chiefly because of the indications found with respect to the distribution of its burden.

"As an emergency source of revenue the tax has the undeniable advantage of yielding a certain amount of money, quickly; but it is not the only tax possessing this virtue. It should not be difficult for the professional student, though removed from the immediate arena of contest, to sympathize with actions of legislators and others in many states who have been trapped by constitutional limitations on the taxing power and by the threats of articulate and powerful groups who would be injured by resort to forms of emergency revenue other than the sales tax.

"Nevertheless, in the writer's opinion, the sales tax as an emergency form of revenue, and certainly as a permanent part of any state's tax system, marks an unnecessary and backward step in taxation."

If real estate must have relief from taxation, the public welfare will be advanced not by the adoption of sales taxes, but by placing more reliance on progressive income and inheritance taxes as sources of governmental revenue. Students of public finance generally have accepted the theory of ability to pay as a proper and desirable basis of taxation. In our present economy, incomes and inheritances form the best index of such ability.

Taxation and Housing

Assuming that, whether by new taxation or by municipal economies, a reduction in real estate taxes is made possible, the public benefits of such reduction will be much greater if applied only to that part of real estate which human labor has created. There is need in every American city right now for large-scale construction of low-cost homes, both as a means of providing employment in the construction industry and as a means of substituting decent living conditions for blighted areas and slums. A scientific system of taxation can aid greatly in meeting this need.

In providing the public revenues of any city, the less we tax land the less is the pressure on owners to sell or use the land for housing projects. The less we tax buildings, on the other hand, the *greater* inducement there is to erect new homes or improve old ones. Obviously, a rational system of real estate taxation will reverse the first trend and strengthen the second. By raising more revenue from the land and less from buildings, two essentials of low-cost housing will be achieved: land will become cheaper to buy and develop, and homes will become cheaper to own or rent.

Part of the confusion on this subject in the minds of lawmakers and home owners arises from the unfortunate legalistic use of the term "real estate" as meaning either vacant land alone or land and buildings combined. The lawyers having united in one term two entities as dissimilar as oil and water, taxmakers traditionally follow suit.

Why labor products that happen to be fastened to the land should be taxed at a high rate, while movable products are taxed at a low rate or not at all, no one has satisfactorily explained. This does not mean, of course, that movable products ought to be taxed. On the contrary, personal property—as such products are generally called—has been found to be so unreliable and inequitable a source of public revenues that the personal property tax in most states is either a farce or a corpse. Taxes on homes, however, continue to be exacted, not from any special or economic necessity, but because homes are anchored to the land and are legally classified as part of real estate. Thus we perpetuate the penalizing of *home* owners and tenants for their thrift and energy. While doing so we present to city *land* owners rents or speculative profits which they are able to collect because of holding title to portions of the earth's surface which they never created, and whose value is derived mainly from the presence and activities of the city's population and from the expenditures and services of government.

A *horizontal* cut in the real estate tax rate would benefit the home owner much less than a sales tax would cost him, and would benefit the tenant probably not at all. Both would be better served if the entire reduction in real estate taxes were made applicable to buildings, which represent the major part of the investment in homes and industry. This would also give relief to owners of modern business property, and would properly penalize holders of dilapidated and unsanitary structures worth much less than the site on which they stand.

Such a reform in our taxing methods would require in most states enabling legislation, and in some a constitutional amendment. But the results, when achieved, would well repay the effort.

A Scapegoat for Tax Delinquents

During recent months the alleged intolerable burden of real estate taxation has become a very popular scapegoat on which to load our sins of tax delinquency. The fact is, of course, that burdens on debtors and losses to creditors resulting from corporate and private debt—much of it incurred in the purchase or development of real estate at inflated prices—has resulted in much greater hardship than has the payment or non-payment of public obligations. If we learn from the crisis out of which we are now muddling, and base a future policy of wise public spending on a national foundation of income and inheritance taxes, and on the collection more largely by local governments of the economic rent of land, we shall level off the next depression much more quickly. Indeed, THE AMERICAN CITY associates itself with the growing body of economic thought which believes that, given a really scientific system of public taxation and finance, *there need be no next depression.*

—The foregoing statement of editorial opinion is based largely on two recent public addresses by the editor of THE AMERICAN CITY—a talk in Washington on January 27 before the National Public Housing Conference, and a radio discussion on February 6 in the "You and Your Government" series over a nation-wide network of the National Broadcasting Company.

Making Fertilizer from Activated Sludge

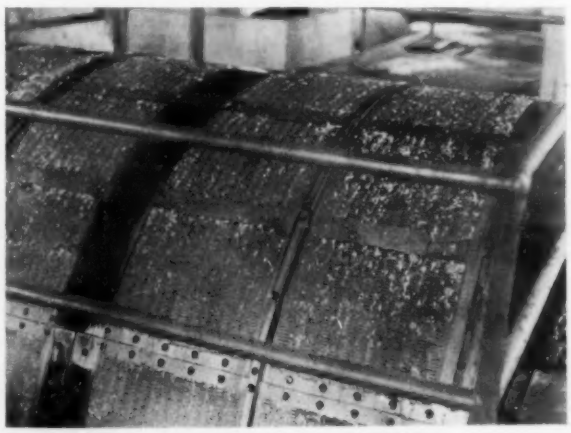
By HARVEY W. HINCKS, M. Am. Soc. C. E.
City Engineer, Pasadena, Calif.

THE continued and increasing interest, not only on the part of sanitary engineers but by the general public, in the question of complete and sanitary disposal of municipal sewage warrants a detailed description of the Tri-City sewage treatment plant serving the cities of Pasadena, Alhambra, South Pasadena and San Marino, Calif.—a combined population of about 124,000. The Tri-City sewage disposal plant is owned jointly by the cities of Pasadena, Alhambra, and South Pasadena. It is governed by a Board of Management composed of the city managers of the three cities, and is operated by the city of Pasadena. The plant has been in continuous operation since January, 1924, practically ten years. It has been enlarged several times, but no reason has been found for changing the process. At the present time it is treating an average annual flow of approximately 3 billion gallons and producing organic fertilizer as a by-product.

AIR COMPRESSOR PLANT
This view illustrates the parklike appearance of the grounds

The Activated Sludge Process

The activated sludge process is conceded to be the most efficient method from the results obtained, for the disposal of sewage. It consists of agitating a mixture of sewage with about 20 per cent or more of its volume of bacterially active liquid sludge, activated sludge, in the presence of atmospheric oxygen, for a sufficient length of time to coagulate a large proportion of the colloidal substances, followed by sedimentation to separate the solids and the water. The bacterially active sludge which is added to the sewage is first produced by aerating successive batches of sewage and circulating the solids deposited in the sedimentation tanks until the activated sludge is built up. The length of time required to build up an activated sludge is from two to four weeks. Once the activated sludge is obtained, a supply is always available for mixing with the new sewage. By adding activated sludge to the sewage, good clarification is possible after about six hours' treatment. To obtain similar results without the addition of activated sludge would require two to four weeks' treatment. After the activated sludge is obtained and the process is functioning, it is necessary to continuously remove from the system an amount of sludge equivalent to the solids contained in the incoming sewage, to prevent overloading the plant. This surplus sludge is filtered, dried, ground, sacked and disposed of as fertilizer. The clarified effluent from the sedimentation tanks is emptied into the Rio Hondo Wash at a point south of Garvey Road and east of San Gabriel Boulevard.



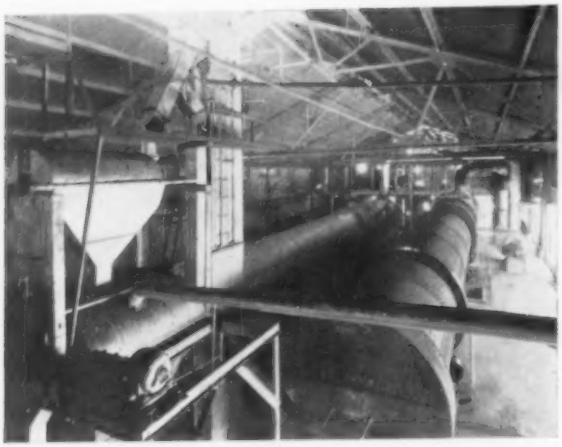
SCREENING PLANT—INTERIOR
The purpose of the screens is to remove the coarse solids, which amount to only 5 to 10 per cent of the total solids contained in the sewage. There are two screens, each with a daily capacity of 10 million gallons. The screens may be operated independently of each other, or both used at the same time

Compressed air is a necessary adjunct to the activated sludge process, and five rotary type, positive pressure air compressors, with a total capacity of 20,000 cubic feet per minute are maintained to furnish the supply of air required, the air being filtered to remove dust which would clog the diffusion plates. The purpose of this air is threefold:

1. To keep the contents of the tanks constantly agitated.
2. To furnish oxygen for such chemical reactions as require this.
3. To supply air to the aerobic bacteria, by the action of which the solid material in the sewage is converted into sludge.

Screening

On reaching the plant the sewage first passes through a bar screen to remove any large objects that might cause damage to the equipment. From the bar screen the sewage passes through rotary screens to remove the coarse solids, consisting principally of vegetable and fibrous matter. There are two screens so arranged that they can be operated independently of each other or both used at the same time. The capacity of each screen is 10 million gallons daily. The screens are of the Dorrco type, cov-



DRYERS

This view shows the two revolving cylindrical dryers from the discharge end. They are of the double shell type, one 70 inches in diameter and 60 feet long, the other 90 inches in diameter and 60 feet long. The fans shown at the right are used to remove the exhaust gases

ered with manganese bronze plates, pierced with carefully milled and polished slots. In one screen, 6 feet in diameter and with a 6-foot face, one-half of the slots are 1/16 x 2 inches and one-half 1/8 x 2 inches. The other screen is 8 feet in diameter with an 8-foot face, all slots being 1/16 x 2 inches. The screens are self-cleaning except for a daily acid wash to remove grease. The coarse solids removed by the screens amount to between 5 and 10 per cent of the total solids. The remaining 90 per cent of the solids are in suspension or solution and small enough to pass through the slots in the screen. The rejected coarse solids are removed from a pit by a bucket elevator, the buckets being perforated to allow drainage, and emptied into a hopper from which a dump truck is loaded. Approximately ½-ton per day, dry weight, of screenings is removed, buried in trenches and covered with dirt. The fertilizer value is low and the cost of converting the screenings would be considerably greater than disposal by burying.

The Storage Equalization Tank

After screening, the sewage enters a channel leading either to a storage tank or directly to a grease- and grit-extracting tank. During the peak flow period, from about 10:30 A.M. to 3:00 P.M., sewage in excess of a 9-million-gallon rate is diverted to a storage or equalization tank, where it is aerated to keep the sewage fresh and also to keep the solids in suspension. The storage tank is emptied into the grease- and grit-extracting tank, starting about 10:00 P.M., when the flow is normally below the 9-million-gallon rate. This tank is made of redwood staves and at the time of construction was the largest of its kind ever built, having a volumetric capacity of 1½ million gallons.

Grease and Grit Extraction

The screened sewage enters the grease-and grit-extraction tank, either directly from the screens or from the storage tank, as explained in the preceding paragraph. This tank is 30 feet long and 10 feet wide, with a water depth of 3 feet. A baffle is placed near the center of the tank, parallel with the flow. Air is blown in at one side, creating a cross-current or spiral flow which causes the grease to be deposited back of the baffle and retained there until skimmed. The grease skimmings are buried with the screenings.

The 429-Foot Influent Trough

The sewage from the grease- and grit-extraction tank, amounting to approximately 3 billion gallons annually, passes through a Parshall measuring flume, where it is carefully measured and the volume of flow automatically recorded, and then into an influent trough or channel. This trough is 429 feet in length, 4 feet wide at top, and V-shaped, with an average flow depth of 8 feet. The trough is aerated its entire length. Diffuser plates are set in removable holders of our own design. The diffuser plate ratio is 1.53 square feet to 44 square feet of liquid surface. Activated sludge, containing 10 to 15 million bacteria per cubic centimeter, is added to the new or raw sewage.

Aeration

The mixed liquor, or activated sludge and sewage, flows from the influent trough into aeration tanks. There are 34 tanks of ridge and furrow type construction, each 67.5 feet long by 10 feet wide inside, with an approximate effective water depth of 15 feet. The volumetric capacity of each is 73,000 gallons, a total of 2,482,000 gallons. Thirty-one of the tanks are a straight flow type, operating in parallel. The other three operate in series. All the tanks have wood partitions to prevent short-circuiting. Each tank is equipped with 117 porous diffuser plates. The diffuser plate ratio is 1:6 with the rows of plates placed at right angles to the direction of flow in the tanks. The diffuser plates are cemented into channels formed between pyramids or separator blocks. The pyramids are concrete, with 45 degree slopes and are poured on top of the tank floor between each row of plates.

Air is introduced at the bottom of these tanks, being forced through the porous plates to obtain diffusion and as much surface contact as possible between the air and the sewage. In addition to the use of air as an oxidizing agent, the air also serves to thoroughly mix the sewage and sludge and constantly bring a new surface into contact with the atmosphere for further oxidation. It is generally conceded that 10 to 25 per cent of the air forced into the tanks is used for oxidation, the remainder being used for agitation. The mixed liquor is retained in the aeration tanks for a period of 5½ to 6½ hours, being constantly displaced by the new mixed liquor entering from the influent trough. This mixed liquor contains about 2,000 to 2,500 parts per million suspended solids.

Sedimendation

As the mixed liquor in the aeration tanks is displaced it passes into a distributing channel from which it is distributed to the sedimentation tanks, or clarifiers, as they are more commonly known. The distributing channel is V-shaped at the bottom, having an approximate water dept of 3 feet, and is equipped with diffuser plates set in holders of the same design as those in the influent trough. The diffuser plate ratio is 1.53 square feet to 22 square feet of liquid surface.

The sedimentation tanks, six in number, are square at the top and circular at the bottom. The corners have sloping concrete fillets. Each tank is 50 feet in diameter at the bottom, 12 feet deep at the side walls, and 16 feet deep at the center. All the tanks are equipped with Hard-

inge spiral mechanisms to move the solids deposited to a 12-inch center outlet pipe. Five of the tanks have single spiral mechanisms, and one tank a double spiral mechanism.

In sedimentation it is very essential that agitation be kept at a minimum, the sludge in the mixed liquor being so nearly of the same specific gravity as water that any appreciable disturbance will interfere with sedimentation. The bottom of the sedimentation tanks slopes from all sides to the center, and as the solids deposit on the bottom they are moved very slowly to the center outlet by means of scrapers attached to the spiral mechanism, which revolves at the rate of twelve minutes per complete revolution. A pipe line connects the center outlet to a pump, which removes the solids, in liquid form, from the clarifiers. The pumps discharge into re-aeration tanks, where the sludge is revivified before being added to the new sewage entering the plant. There are five re-aeration tanks of the straight flow type operating in parallel, of exactly the same size and construction as the aeration tanks previously described.

Clarified Effluent

The effluent or water from the sedimentation tanks is very clear, and the reduction in bacteria is 99 per cent plus. Raw sewage contains approximately 5,000,000 bacteria per cubic centimeter. The effluent from the sedimentation tanks contains approximately 200,000 bacteria per cubic centimeter. The reduction of solids is 90 to 95 per cent. In order that the effluent may be still further purified bacterially, so as to render it harmless before it leaves the plant, it is chlorinated, thereby reducing the bacteria to not more than 300 per cubic centimeter. The requirements of the California State Board of Health permit 10,000 colonies per cubic centimeter.

Disposition of Effluent

The effluent after chlorination flows to a pump house, where it is measured and from which point water is pumped for use about the plant for washing, cooling and irrigation; also, water is pumped to irrigate the Pasadena City Farm. This water is ideal for irrigation because of the nitrogen compounds in solution. It is estimated that approximately a ton of nitrogen per day is carried away. The effluent, while not suitable for domestic use, could by further treatment be made satisfactory for industrial use.

The remainder of the effluent is run through a 36-inch concrete pipe line, from which it discharges into the Rio Hondo at a point five miles below the plant. The total flow approximates 5,000 gallons per minute, which is equivalent to 11.14 second-feet or 445.60 miner's inches (California).

Converting Activated Sludge Into Nitroganic Fertilizer

Disposition of the excess sludge has been the principal problem connected with all sewage disposal. Pasadena has solved the problem by converting a nuisance into a valuable and increasingly popular fertilizer known as "Nitroganic." The process is as follows:

Coagulation.—The activated sludge in excess of the amount required to add to the incoming sewage is drawn from the re-aeration tanks into tanks where ferric chloride is added to coagulate the solids. There are two tanks, each 33 feet long, 15 feet wide, and 12 feet deep inside, with a total volumetric capacity of 80,000 gallons. Air is admitted at the bottom of the tanks to obtain complete mixing and flocculation.

Sludge Filtering.—The sludge, after coagulation, runs by gravity to three continuous vacuum filters of the Oliver revolving drum type. One vacuum pump, 23 x 12, of the Ingersoll-Rand type, is used for the three filters. The sludge when it reaches the filters is 99 per cent water. Filtering reduces the moisture to 80 per cent.

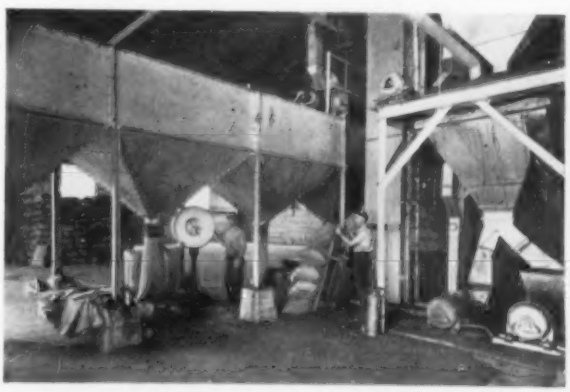
The filters are large drums 11½ feet in diameter by 14-foot face, revolving in large tanks. The face of each drum is divided into 24 sections, or chambers, each approximately 18 inches by 14 feet long, connected to a vacuum pump, a very high vacuum being maintained. Outside these chambers are bronze netting and a heavy wool cloth, on the latter of which the filtered sludge collects.

As each drum revolves very slowly in the tank in which it is immersed, the water is drawn through the cloth into the chambers, and the sludge remains on the cloth as a "filter cake." This is a sheet of sludge from ⅛- to 3/16-inch thick, having about the consistency of wet blotting paper, which it closely resembles in appearance.

At the proper point the vacuum chambers are automatically disconnected from the vacuum, and compressed air is admitted to them, thus loosening the filter cake from the cloth, from which it drops onto conveyors, which carry it to the drying house.

Drying.—Revolving cylindrical dryers are used for drying the material. The dryers are of the double shell type, one 70 inches diameter and 60 feet long, the other 90 inches diameter and 60 feet long. The dryers slope 0.2-inch to the foot, toward the discharge end. Flights are attached to both the outer and inner shells. The filter cake passing through the dryer is cascaded from one shell to the other, dropping on the flights and breaking up. The hot gases are drawn from the combustion chamber, where the temperature ranges from 1,000 to 1,500 degrees F., through the inner shell to the discharge end of the dryer, where the temperature drops to 400 or 500 degrees F., and then back to the feed end of the dryer in the annular space between the shells through which the material is passing. The exhaust gases are taken out of the dryer at the feed end by exhaust fans and are carried to a metal chimney 4 feet square, where sprays are located to wash the gases.

The washed gases pass from this chimney to a double shell stack, which is 37 feet 5 inches high, the outer shell



FERTILIZER GRINDING, SACKING AND WEIGHING

The elevators, screens and grinders are used to pulverize and grade Nitroganic fertilizer for commercial use

being metal and the inner shell fire-brick. The bottom of the brick stack comprises the combustion chamber. The washed gases enter the stack at the top between the two shells. Ports are located at the bottom of the brick stack leading into the combustion chamber. The washed gases are pre-heated as they pass from the top of the stack to the inlet ports, to reduce the fuel required for burning. The gases leaving the stack are practically odorless and are free from smoke and steam. The moisture of the filter cake is reduced from 80 per cent to 5 per cent or less. The sludge discharged from the dryer is conveyed by a bucket elevator to screens which reject the over-size wet material. This over-size is returned and mixed with the filter cake before it enters the dryer.

Grinding, Sacking and Weighing.—The dried fertilizer, as it leaves the discharge end of the dryer, passes through screens to grinders and then through another stage of screening which rejects the over-size ground particles, allowing the proper size to enter the storage bins, from which it is sacked. The over-size particles are returned to be mixed with the filter cake as it enters the dryer.

The fertilizer is packed in burlap sacks, each containing 100 pounds net weight when packed. Sufficient space is provided in the warehouse to take care of any seasonal demand.

The annual production of Nitroganic fertilizer is approximately 3,000 tons, or about one ton of dried commercial fertilizer per million gallons of sewage, or about 50 pounds of dried fertilizer per annum per unit of population served. The material is sterile and does not and cannot transmit disease. This is evidenced by the fact that while the process has been going on for more than seven years, no case of infection or vocational illness has been experienced by the plant operatives. This, however, is not surprising, since the fertilizer consists of totally new chemical compounds. formed by the treatment to which it has been exposed.

ANALYSIS OF NITROGANIC FERTILIZER

Nitrogen total	6.00%
Phosphoric acid, available	2.25%
Phosphoric acid, total	3.00%
Potash	0.30%
Organic matter	70.00%
Boron	None
Moisture, not to exceed	5.00%

Slum Clearance as National Defense

WHEN you build a battleship you do not expect it to pay dividends. It is enough if it renders its fair share of national service. So with these flats. It is enough if they provide shelter for the people."

Quoting this answer of a Continental guide to an inquiry as to how the low rents in a model housing development had been made possible, Dugald Macfayden, in addressing a recent meeting of the Town Planning Institute, of England, paid his own respects to the slums, in language equally applicable to many an American city:

"If slum clearance is to be regarded as a national function like national defense, it might be financed on the same terms as national defense. It costs eight million pounds to build a battleship—and you get no dividends for that money. You could build quite a lot of houses—clear out quite a lot of slums for eight millions. Your return would not be in dividends. It would be in terms of life—greater efficiency—improved standards of health—better work—less disease—fewer days lost by illness—less cost for hospitals—less lost through drink—fewer strikes because more contentment: all these are dividends worth having though they have no market price. . .

"The essence of the matter is that our replanning must plan for the human being as a whole—physical, social—as well as economic. It only creates fresh troubles to provide for one part of him and destroy nature's balance. We know enough of the interaction between mind and body, health and mental fitness, imagination and achievement, to know that you cannot draw a line anywhere in a developing human being. He has to grow as a unity if the world is to get the benefit of all his faculties. That is quite as fundamental to the idea of Garden Cities as the public ownership of land or 12 houses to the acre. May I suggest to the Chancellor of the Exchequer that death duties from large estates should be earmarked for this purpose? These, being capital funds, might be properly employed in capital expenditure. . . .

"We need a high tide of indignation, passionate feeling, determination, such as swept away the slave-trade. It has just as sound a basis and a better chance of success than that movement had when it began. . . . Stated positively, the actual facts about slums and their effects on those who live in them are not fit to print. Stated negatively, a slum is a condition of housing in which the inhabitant is unable to maintain the standard of health, decency and self-respect on which all useful work must be founded. Slum dwellers are not reliable workers—not because they don't want to be but because they cannot be. They have neither the physical nor the mental qualities which are needed for good work. It is true that they develop some other qualities which mitigate the tragedies of wrecked humanity which they become, but by and large they constitute a burden of feckless, spiritless, reckless, incompetent humanity which is an increasing menace to our national well-being. That heap of festering humanity constitutes our leverage for raising the standards of public decency throughout the country, in matters of housing. . .

"Where the bread-winner cannot be more than a few hundred yards from his work, his family must be made as comfortable as possible while they endure the slow sentence of extinction, which is involved in living in a sunless—airless—but not smell-less—neighborhood. Town planners will not overlook the fact that all temporary patching-up of these districts to meet an immediate need is adding a difficulty for the town planners of twenty years hence, who will certainly be ruthless in clearing them away to make room for more adequate schemes. If we spend money on reconditioning out-of-date houses and building flats for people who must be near their work, it should be done with full recognition that the money is being poured down a sink and that the time will come when workers will follow their work somewhere else.

"The point we want to make clear with the thoughtful public is that we are already past the stage of palliatives and have got to the point when more fundamental thinking and more drastic planning is necessary for a future which is advancing on us with a tempo which gets into ten years changes which in other times would have taken 30 or 40 years. . .

"A strong public feeling will supply a dynamic capable of removing all obstacles. Planners must guide this movement into right channels—and the Government of the day cannot be allowed to refuse adequate administrative powers and machinery and carry out a task on which the nation has set its mind."

Cutting Costs in New York State Cities

By HAROLD B. EVANS

Purchasing Agent, City of Watertown, N. Y.; Secretary, New York State Governmental Purchasing Agents' Association

AS THE searchlight of public interest was gradually focused more and more closely on the expenditures of municipal governments starting with 1930 the fact that many branches of city government were being poorly managed became a matter of public information. Particularly, the prices paid for the commodities used by cities were scrutinized, with resulting revelations that astounded many good citizens formerly too busy to take any interest in the disposition of their tax dollars. Millions of people were surprised to learn a truth that even a casual observer could see; namely, that through political influence or carelessness or inefficiency, many municipalities were being gouged on prices.

As a result of the awakening of public interest in governmental purchasing, the New York State Conference of Mayors and Other Municipal Officials, of which W. P. Capes is Secretary, began to receive many inquiries regarding purchasing methods, as well as queries concerning prices paid for the more important items purchased by various cities. The information secured by Mr. Capes convinced him that a large number of city buyers were unaware that they were paying excessive prices for materials they were purchasing. No excuses could be made for this fact, so the important question arose as to what could be done about it.

A List of Important Municipal Purchases

Mr. Capes believed that if the less efficient buyers knew the prices paid by cities more efficiently operated, lower prices would be sought and secured. As a first step in the securing of such prices, the writer was asked to submit a list of the more important materials purchased by him. After this list was submitted, a committee consisting of Hamilton R. Holcomb, Purchasing Agent of Binghamton, Norman C. Sprickman, Director of Purchase of Buffalo, Wendell E. Andrews, Purchasing Agent of Rochester, August Smingler, Secretary of the Board of Contract and Supply of Syracuse, and the writer, were called to Albany to comment on the list of materials.

This list, as finally approved by the committee, was made up of sixty-five commodities. The committee members also discussed the practical operation of the service, and decided, with Mr. Capes' approval, that what was believed to be the first price service, dealing exclusively with municipal purchases, would be inaugurated in November of 1931.

It was planned that on the last day of each month the Mayors' Conference would send to the purchasing department head of each New York State city and each first-class village a duplicate printed list of the sixty-five most important commodities purchased. The reporting officials were to return one of the lists to the Conference office by the tenth of the following month, stating the quantity, quality and price paid for each of the materials purchased during the preceding month. Upon receipt of the purchasing officials' reports from all over the state, the prices paid for each commodity were to be grouped under their proper headings, giving the name of each municipality reporting and the size, trade name, quality, quantity, and price reported by each. Upon completion, the reports were to be mailed by the Conference to the purchasing department head of each municipality by the fifteen or twentieth of each month.

Some Startling Price Variations

The first report mailed out covered the purchases of November, 1931. As was expected, startling variations in prices paid were found on materials of the same quality being purchased by different cities and villages. Many purchasing officials were amazed to discover that what they had been looking upon as fair prices were excessive, when compared with prices paid by other cities. Another discovery that surprised all the more efficient buyers was that though the average of their prices was low, each buyer was paying more for some commodities than other buyers. So the price service proved to be of value to both good and poor buyers, contradicting the opinions of those who had thought it would be of value to the inefficient purchasing agents only.

As was confidently expected, when the public buyers became acquainted with the service, the spread in price variations gradually decreased from month to month. However, it was not until January of 1933, that any exact measurement of the decreases in price variations was made. At that time the writer compared the prices given in the first report with those of December, 1932.

Intelligent Comparison Secured

The brevity of the reports, as well as the failure of some of the reporting officials to give accurate information, resulted in a lack of data concerning qualities, quantities, and sizes. This lack of information caused the elimination of thirty-eight commodities from the list of comparisons made. Seventeen commodities were not compared because of the small number of prices reported. But ten materials remained that could be compared to give accurate information on the trend of price variations.

To a casual observer it might seem that a price service would be of doubtful value if it contained sixty-five sets of prices of which but ten could be intelligently compared for trends. However it should be remembered that a trend can be shown only if approximately the same quantities and qualities are being compared. For instance, prices on eight or more qualities of shovels were reported in November, 1931, in quantities of from one-sixth of a dozen to four dozen. Obviously, no accurate conclusions regarding trends could be made from these prices. Yet an official who bought two shovels of a particular make and number would be reasonably certain that he had secured a fair price if he found that some one else had purchased the same shovel in one dozen lots at a slightly lower price,

and that the purchaser of six dozen of the same shovel had paid but a few dollars a dozen under the one dozen purchase price.

Before proceeding to the conclusions drawn from the price study, it would perhaps be wise to show the method used in tabulating the prices on the materials. The following table is a duplicate of one appearing in the study of the ten comparable commodities:

Name of Commodity	Kerosene	Nov., 1931	Dec., 1932
Size of purchases used in comparison	50 to 300 gal.		
Highest price paid		$.15 gal.	$.095 gal.
Lowest price paid		.077 gal.	.065 gal.
Excess of highest price over lowest		94.8%	46.2%
Average price		$.1023 gal.	$.0843 gal.
Excess of average price over lowest		32.9%	29.7%

As can be readily seen, the excess of highest price over lowest price was 48.6 per cent less in 1932 than in 1931, and in the same year the excess of the average price over lowest was 3.2 per cent lower than in 1931.

Definite Good Results

Averaging the comparisons made on the ten comparable commodities, it was found that in November, 1931, the highest prices averaged 73.9 per cent above the lowest, and that the average prices exceeded the lowest by 31.28 per cent. In December, 1932, the highest prices averaged 42.12 per cent more than the lowest, while the average prices exceeded lowest prices by 22.45 per cent. Accordingly, there were net differences of 30.78 per cent and 8.83 per cent in favor of December, 1932, over November, 1931, on the two sets of figures, respectively.

When variations in comparable prices decrease, either the more efficient buyers pay higher prices or the less efficient buyers pay lower prices. Certainly there is no reason for assuming that there was any decrease in the efficiency of the better buyers. But by their own admission, upon reading the Conference price reports, many buyers were surprised to find their costs high as compared to others. It is therefore logical to assume that the proven decreased variations in prices were brought about largely by the reports of the Mayors' Conference.

Further, it may logically be assumed that, if the average variations of the ten sets of prices possible to compare were considerably reduced, the variations in other prices, impossible to compare, were also reduced.

In conclusion it can be said that during the period covered by the first fourteen of the monthly price reports issued by the Mayors' Conference, the percentage of variations in prices paid decreased considerably. If it be remembered that this percentage decrease applied against the millions of dollars in purchases made by New York State municipalities, there can be no doubt that thousands of dollars were saved the taxpayers of the state. Further, these savings have continued and doubtlessly will continue for years, for the service is being more and more widely used at the present time.

An Offer of Cooperation

There is no reason for believing that municipal buyers of New York State are alone in paying excessive prices. Undoubtedly, great savings could be made in many other states by services similar to that of New York. The writer has been authorized by Secretary Capes to say that he will gladly furnish all available information to any person contemplating the establishing of a similar service for other sections.

The statement that "Knowledge is power" is particularly applicable to the purchasing field. Buyers everywhere must know more and more about the technical details of the materials they buy; they must acquaint themselves with more and more specifications; they must learn of new materials; they must be positive that their requests for quotations are sent to all low-cost, efficient producers; and, above all, they must know, not guess, that the artificially set prices they have been paying, and probably will pay for some time to come, are the right prices, and not excessive. New York State buyers may indeed consider themselves fortunate in having an accurate, simple price list with which to check their quotations. The writer believes that he can suggest to the purchasing officials of cities in other states no greater help than a similar list of prices, for if thousands of dollars can be saved annually in New York State, can other states afford to be without such a service?

European Study Tour Planned by American Peoples College in Europe

A THREE-MONTHS study tour in economics, municipal housing, comparative government and politics is to be offered this summer under the auspices of the American Peoples College, in Europe, which has its New York office at 545 Fifth Avenue. Special attention will be given to model housing projects, factories, municipal institutions and unemployment projects, and interviews made possible with various government officials, economists and university professors throughout Europe. The itinerary will include Geneva, Lyons, Vienna, Helsinki, Copenhagen, London, Frankfurt-am-Main and the picturesque cities of Düsseldorf and Essen in the heart of industrial Germany, with the well-known industrial village development created at Margarethenhohe-bei-Essen.

The American Peoples College in Europe was founded five years ago on a non-profit-making basis under the auspices of a group of American educators interested in bettering international relations. Among its sponsors are Dr. John Dewey, of Columbia University, Dr. Harry Overstreet, of the College of the City of New York, and Dr. George S. Counts, of the International Institute, Teachers College, Columbia. The College has its headquarters in a picturesque Tyrolean town high in the Austrian Alps, where lectures and discussions on conditions and outlook of the various European countries are given by outstanding leaders in the fields of economics, social life and politics.

After a few weeks in this informal college center, the Americans break up into study tours according to their predominating interest—economics, music, drama, education, psychology or general social and cultural developments—and travel through Europe in small groups coming into first-hand contact with present conditions.

Through the cooperation of foreign governments and foreign educational organizations, the College has reduced the expenses of traveling and living in Europe to a minimum. Membership in the groups is limited to men and women sincerely interested, but it does not depend in any way upon former education.

Playgrounds and Public Forests from Farms

By HENRY S. CURTIS
Ann Arbor, Michigan

THE first two decades of the present century saw a rather rapid depletion of the farm population of the United States through the migration to cities. Despite this, there have remained a good many more farmers than could make a comfortable living from agriculture. The White House Report on Social Trends as applied to farming opens with the following sentences by Mr. Baker of the Department of Agriculture:

"Two developments of the last decade have greatly reduced the prospective need of farm land, made former policies obsolete, and raised grave economic and social problems. These two developments, not new, but of greatly increased importance, are the rapid increase in agricultural technique and the rapid decline in the number of births. Supplementing the decline in births, we have congressional acts and executive orders which have greatly reduced immigration, until in 1931 emigrants exceeded immigrants."

Add to this the loss of a good share of our foreign trade, and the reasons for the farmers' plight become plain. The commission estimated that, for present conditions, we have 55,000,000 too many acres in agriculture.

As soon as Secretary Wallace assumed office, he said we had too much farm land and we must withdraw 40 to 50 million acres from cultivation. The plan proposed was to hire farmers to plow up a certain proportion of their wheat and cotton or to let a part of their farms lie idle. The Government undertook to compensate them by paying them a rental of $3 an acre for the land thus taken out of use. It did not work very well, and no other policy of the Government has caused so much criticism as this one of destroying crops and pork, while great numbers of people were going hungry.

A SUNDAY BREAKFAST IN SAND RUN RESERVATION, NEAR AKRON, OHIO
Showing a few of the half-million patrons of this comparatively new area

A Wiser Plan for the Use of Marginal Land

Recently the Department of Agriculture has been thinking along different lines. At the meeting of economists in Philadelphia a short time ago, Assistant Secretary Tugwell announced that the Department had set aside $25,000,000 in order to withdraw land from agriculture. The appropriation was to be used to initiate the movement in four states. If the results were satisfactory, the experiment would be extended to cover the entire country, and $350,000,000 would be appropriated to buy 50 million acres of marginal land which is now ruining the owners, who are trying to work it and are bringing down the standards for the industry as a whole.

It is proposed that this land should be turned into public forests, game preserves and parks. This is surely a wiser method than the one earlier attempted, because land purchased is retired from competition permanently, whereas land leased has to be leased over again every year. Also, the land leased was good land which might be worked profitably under the best conditions; whereas the land to be purchased is land that is never likely to yield a net return except in war time or some other period of very high prices.

But there are other reasons for this change of policy that are quite as cogent. We are growing only 25 per cent of the timber we are using each year. Obviously, such methods cannot go on forever without completely exhausting the timber supply. It is also generally conceded that timber and game are about the only profitable crops that this poor land will raise. It would not be profitable for a private owner, because it takes nearly a hundred years to bring a crop of timber to full maturity. But a hundred years is not long for a community, and every year the stand will be increasing in value, and every year the returns from wood, fence-posts, railroad ties, and game should increase.

Forests and Game Preserves

Many of the cities of Europe derive the whole or a part of their support from their municipal forests. There has been a good beginning in city forests in this country within the last decade. About forty Michigan cities now have larger or smaller tracts. But the city is not a good place for a forest. Land near cities is dear and hard to secure, and the proper land for forests is the poor land which cannot be used profitably for other purposes. The county is in every way a better location.

PARKING GROUNDS IN A PARK NEAR MIDDLETOWN, OHIO

This land which is set aside to grow timber may also become a game preserve. These two uses fit together admirably, and bring back conditions as they were in pioneer days in America. No one can tell the exact value of the game and fur to come from these reservations, but Pennsylvania estimates the annual value of its game at $7,500,000, which would be 3 per cent on $224,000,000, about enough to purchase most of the land it is proposed to retire. Michigan estimates the value of its fur crop at $3,000,000 annually. I have never seen any estimate of the value of the fish from its inland streams and lakes. But, after all, the money value is not what we are primarily interested in. We like to watch wild animals and birds, especially where they are protected and tame, and most of us like to hunt and fish. With a thirty-hour week, we are going to have a great deal more time for such activities, and with the six-hour day we should not be too tired.

But the most important use of this land is going to be as a system of county parks. Perhaps they will not be under county direction. Certainly they should not be unless the counties are reorganized to put some one in charge and make possible an executive staff trained in the activities to be conducted.

At first it was thought that the place for parks was in cities, where they would serve as breathing spaces. We probably need within the cities all the parks we have; but it is not necessary to put the larger parks there. New highways and the automobile have made the country accessible in a way that it never was before, and most of us would probably prefer to go into the country for our outing. It may be objected that many of the people do not have cars; however, it is notable that a good share of those who are "on the welfare" and working for the CWA go to work in their own autos.

The Trend to the Country

There are, moreover, three rather striking movements at present away from the city. It is too early to predict the outcome; but again the study in Social Trends shows a loss of 20 per cent from the interior areas of cities during the last fifteen years, and an increase of 50 per cent in the population of the metropolitan areas lying outside the city boundaries. Wealthy men are building magnificent houses in the country where they can have large grounds and low taxes. Most of the fine new houses are so located; just as nearly all the fine houses of England and the Continent always have been. For many miles along all the main highways leading out from our big cities, workingmen are taking up small tracts where they can have a garden and own a small home. Henry Ford says in his autobiography that as fast as possible he means to break up his Highland Park plant into a thousand small plants, each with its own water power and a force of about a hundred men. His idea was that each man might thus have a garden and something to do when the plant was closed down. The movement for subsistence homesteads has not gone as fast over the country as many had hoped, but it seems to be getting slowly under way.*

Recreation in the Agricultural Counties

There are 3,016 counties in the United States. Probably about 2,000 of them may be regarded as agricultural. Fifty million acres of land divided equally among 2,000 counties would give to each of them 25,000 acres, a goodly area for a forest, game preserve, and park. It should be sufficient to grow all the trees and game that the county needs.

In such an area, there would be room for several bathing beaches, and for as many picnic groves and tourist camps as the county might need. There would be ample space for golf links, tennis courts and baseball, as well as adequate camp grounds for the Boy and Girl Scouts, for 4-H Clubs, for church and school groups, and for the children from the city playgrounds. These facilities would thus be provided for all, and would go to those who must pay for them through their taxes.

It would also seem possible to add a couple of acres to the grounds of all rural schools throughout the nation. Most rural schools have at present less than half an acre, which is not enough for baseball or many of the other active games. If the school is to have a garden and nature study, as it should, five acres would not be too much. It would surely be better to give this needed ground to the schools than to pay the farmers to let it grow up to weeds.

A Present Opportunity

Just now is the ideal time to acquire and develop this land. Much of it is coming back to the state in any case from non-payment of taxes. Almost any of it can be bought today for a half to a quarter of what would have been charged for it ten years ago. Welfare officers are finding it difficult to locate jobs that promise a satisfactory return, but in the reforestation of such a tract, the building of camps, the development of bathing beaches, golf courses and picnic grounds, there would be work for all. It is also work that must be done if we are to offer wholesome uses for the new leisure that is upon us.

The maintenance of such a system should involve little if any public expense. Many state parks are already self-supporting, and the others are drawing nearer to that goal every year. There is no evident reason why a public bathing beach, that need not pay taxes, should not be as profitable as a private one that must pay them, or why public golf links and tourist camps should not yield as large returns as private ones.

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* See page 75 of the February issue.

EDITORIAL NOTE.—The illustrations in this articles are used by courtesy of the National Recreation Association.

Accurate Accounting for Force Account Construction

Sheboygan, Wis., Has Produced Many Fine Streets and Structures Through a Well-Managed City Construction Department

THE bugaboo of force account or day-labor construction in most cities is that the accounts are not kept completely, nor are all the items of overhead and construction equipment included, so that the true costs are not shown in the final cost sheet. This is not the case in Sheboygan, Wis., for a very complete system of showing the entire cost of the project as it progresses makes it possible to find even after years the names of the men who were employed, the hours they worked, the equipment used, its rental charges, the materials, the trucks which actually worked and the days and hours they were on the job. A system of shop accounting shows the cost of the truck when it was purchased, with due allowance for the turn-in value of the old truck, and the hours it worked on various jobs, with the rental charges, and against this the costs for overhauling and parts and labor. Overhead is charged at a definite rate and compensation insurance is included on all work, so that no items are omitted. This system is commended to other cities which want to really know the costs of maintenance of all equipment and the cost of doing work by day labor.

As an example of the detailed costs of one of the last projects handled by the city, we give the costs for the construction of four blocks of concrete paving on Broadway between South 17th and South 21st Streets in 1932. There has been no paving during 1933.

Grading			
1932, August 1	Payroll	$126.00	
October 1	do	330.10	
October 15	do	353.03	
Paving			
1932, October 15	Payroll	530.38	
November 1	do	600.29	
Labor		$1,939.80	
(3%) Liability insurance		58.19	
			$1,997.99
Materials			
Cement 1,625 barrels at $1.40		$2,275.00	
Sand 674.37 tons at $1.056		712.14	
Stone 1,417.8 tons at $1.146		1,624.80	
½-inch expansion joints 2,499 lin. ft. at $0.05		124.95	
¾-inch expansion joints 1,302 lin. ft. at $0.10		130.20	
Reinforcing wire, 5669.4 sq. yds. at $0.17		963.80	
Gasoline, 1,244 gallons at $0.17		211.48	
Motor oil, 36 gallons at $0.50		18.00	
Kerosene, 17 gallons at $0.12		2.04	
			$6,062.41
Equipment			
No. 13E paver, 62½ hours at $2.00		$125.00	
Loader No. 1, 62½ hours at $1.00		62.50	
Loader No. 2, 62½ hours at $1.00		62.50	
Batch trucks, 965 hours at $0.50		482.50	
Sterling truck No. 2, 27½ hours at $1.00		27.50	
Sterling truck No. 1, 19½ hours at $1.00		19.50	
Power shovel, 17 hours at $3.00		51.00	
Caterpillar Twenty tractor, 9½ hours at $1.00		9.50	
Caterpillar 2-ton tractor, 16 hours at $0.75		12.00	
			852.00
Extra grading carried over from 1930			581.74
Incidentals			25.19
Total cost			$9,519.33

5,666.27 square yards of concrete pavement, 7½ inches thick, 1:2¼:3½ Mix @ $1.68, laid for $9,519.33.
No overhead was carried on this job, as it was instituted and carried through as an unemployment relief project.

Sidewalk Construction

Considerable sidewalk construction is done by city forces at the request of property owners, who are assessed the entire cost of the work. A typical sidewalk crew consists of a mixer-man, one man on the stone wheelbarrows, one man on the sand wheelbarrow, two men wheeling the concrete, one man tamping the concrete, one man spreading concrete, and one man finishing. A 1:3:5 mix is used for the base, and a 1:3 mix for the top. Care in the selection of equipment to best handle the work throughout in all projects makes possible the most work for the least money. This is apparent even in the sidewalk crew equipment where two types of Sterling wheelbarrows are used, one especially for the handling of aggregate and another type for the concrete. A Koehring Dandie 1-bag mixer is used.

The Broadway Viaduct

A notable piece of construction was completed by city forces between November 7, 1931, and September 21, 1932. The layout of the city of Sheboygan is such that many sections of the city which are actually adjacent are distant when one tries to walk or drive from one to the other, owing to a deep railroad cut and also to the hills on which the city is built. This Broadway viaduct was built as an unemployment relief measure. It connects two important sections of the city and also runs partly parallel to the main north-and-south thoroughfare entering the city. This somewhat influenced the design of the structure, which was a reinforced concrete viaduct with 16 spans. If the east end of the structure had been left with the piers showing, it would have been unsightly, so an extra $1,500 was appropriated to erect a curtain wall with simple paneling, as shown on page 54. This wall appears to approaching traffic to be a retaining wall for the structure, but behind it is a wide concrete area which might be used for the storage of pipe and small equipment. The lower end is built so that trucks can be driven up to it and loaded directly from the platform.

The Broadway viaduct measures 628 feet 3 inches from face to face of the abutments, and has a 36-foot roadway and two 8-foot sidewalks. The location of the viaduct is such that it was necessary to make a slight angle in it and it ends at a bad traffic corner. In order to prevent a further tangle caused by pedestrians trying to cross at this point, one of the sidewalks was terminated at a point about 200 feet from the end, and a stairway was built to permit them to get off the viaduct and cross where there are only two streams of motor traffic. The west spans of the viaduct, of which there are nine, are 40 feet each, the rail-

FORCE ACCOUNT CONSTRUCTION IN SHEBOYGAN

1. A sidewalk gang, tool-house and truck. 2. The Broadway viaduct, a force account job, showing the stairway and curtain wall paneled for appearance as it faces a main highway. 3. Back of the curtain wall in the preceding photograph, showing the cantilevered construction and the storage or loading platform beneath

road span is 45 feet 6 inches, and the six east spans on a curve are each about 33 feet long. The structure is of reinforced concrete girder, beam and stringer construction with a concrete slab floor. Where it crosses the railroad, steel girders encased in concrete below and exposed above were used. The stringers and floor beams for this span were also of steel. This span was painted with an acid-resisting paint to preserve the concrete from disintegration from the acid fumes of the locomotive stacks.

The costs for the work in detail were as follows:

Labor	$25,796.76
Cement	6,222.34
Aggregates	4,885.76
Lumber	4,141.99
Reinforcing steel, structural steel, and hand rail	16,331.47
Asphalt plank	1,875.38
Freight	1,431.36
Hardware, light conduit, etc	3,605.87
Total	$64,290.93
Estimate	75,000.00

The engineer of design and construction received 3% of the actual cost as his fee. There were extras of $413.46 added to the cost because of the extension of the south wing wall of the east abutment.

Equipment Costs	
Gasoline, 3,986 gallons at $0.173	$689.58
Motor oil, 82 gallons at $0.50	41.00
Loader No. 1, 253½ hours at $1.00	253.50
Loader No. 2, 253½ hours at $1.00	253.50
13E paver, 255 hours at $2.50	637.50
107S mixer, 1 hour at $0.50	.50
Crane, 88½ hours at $2.50	221.25
Power shovel, 126½ hours at $2.50	316.25
Sterling truck No. 1, 131½ hours at $1.75	230.12
Sterling truck No. 2, 31½ hours at $1.75	51.13
Air compressor, 172 hours at $1.25	215.00
Batch trucks, 1,982 hours at $0.25	495.50
Caterpillar Twenty tractor, 4 hours at $1.00	4.00
Caterpillar 2-ton tractor, 140½ hours at $0.75	105.38
	$3,514.21

The department formerly charged 5 per cent of the total cost of a project, including equipment for overhead, but on the employment relief projects the overhead charge has been omitted. The charges for the use of equipment are enough to replace the equipment when it is worn out and also to show a nice profit to the department. For example, the power shovel is rented to any particular project at $4.00 an hour, the operator is carried on the labor account, and the gasoline and oil are charged separately. The department receives no tax money but operates at a profit from the income on the work it does for the city, and only recently a $50,000 surplus was taken from the department and applied to other uses.

All paving is assessed 100 per cent to the abutting property, with the exception of residential corner property that cannot be subdivided, and then a maximum charge of $700 is usually made. The city pays for all intersections and all excess costs at corners.

Municipal and Legislative Problems to Be Theme of Western Conference

A COMPREHENSIVE program, of much importance to municipal officials and civic organizations, is being arranged for the Western Conference on Government, to be held at International House, University of California, Berkeley, March 28-30. Professor Samuel C. May, Chairman of the local arrangements committee, anticipates an attendance of from 350 to 500, including, in addition to the delegates from the western states, a considerable number of leaders in municipal government and public administration from the East.

The following are the special topics of discussion, as announced by some of the principal participating organizations:

1. The United States Conference of Mayors will discuss problems of metropolitan reorganization.
2. The American Public Welfare Association will discuss the coordination of Federal, state, and local activities, as related to public welfare. A joint session on housing will be held with the National Association of Housing Officials.
3. The Governmental Research Association will discuss the coordination of government research on the Pacific Coast.
4. The American Legislators' Association will discuss problems of legislative reference and legislative drafting and other subjects.
5. The National Municipal League will have sessions on county government and regional reorganization, and on constructive versus destructive economy in government.
6. The Municipal Finance Officers' Association will discuss technical problems of assessment, accounting, etc.

Street Maintenance Programs for 1934

More Cities Report Plans for Rehabilitation of City Streets

IN the January and February issues of THE AMERICAN CITY reports were published from a number of cities in different parts of the country showing their plans for street maintenance during the first six months of 1934. Below are stated the plans of other cities.

Adrian, Mich.

The street maintenance program in Adrian will comprise the resurfacing of three streets with bituminous material, and the resurfacing of about 2 miles of 30-foot pavements. Two more streets will be widened with concrete with an asphalt surface, using either sheet asphalt or cold lay at a total expense of $16,000. The purchases will include stone, tar, asphalt and cement.—WALTER E. FRAZIER, City Engineer.

Alton, Ill.

The street maintenance program for the next six months in Alton will consist of repairing holes in the pavements, cleaning catch-basins and sewers, painting traffic signs, etc., as well as grading the dirt streets and constructing some new culverts. The total expenditure is expected to be about $3,000. This work will involve the purchase of 10 tons of crushed rock, 15 tons of sand, 5 barrels of cement, and 20 gallons of paint.—C. F. ABRAHAM, City Engineer.

Baker, Ore.

No regular program has been formulated for street maintenance in Baker, but work will be done as necessity demands. The second grade or waste material from the municipal quarry will be placed in alleys and on secondary streets.—L. R. STOCKMAN, City Consulting Engineer.

Benton Harbor, Mich.

Only such work as is absolutely necessary will be done in Benton Harbor this year, and the expense will not be over $3,500. There are several park projects underway under CWA, which has taken care of most of the welfare labor in town. No materials of consequence will be purchased for the maintenance program.—C. P. WIGHTMAN, Director of Public Works.

Billings, Mont.

Maintenance of the streets of Billings will consist of the oiling of about 14 miles of streets within the next six months at a total cost of about $7,000. The program will necessitate the purchase of 100,000 gallons of road oil.—R. T. HURDLE, City Engineer.

Bisbee, Ariz.

Bisbee's maintenance program for the next six months will consist of routine surfacing and the hauling-out of flood débris, at a total cost of about $2,300. This work will not necessitate the purchase of any new equipment or materials.—RALPH L. MOTZ, City Engineer.

Burlington, Vt.

The usual custom of surface-treating all Burlington's streets with road oil and doing such cold patching as is necessary will be continued in 1934. The annual appropriation for this work varies from $5,000 to $7,500. There are also numerous construction projects under a $160,000 bond issue being handled under CWA and PWA. Bids have recently been called for all the materials for the work, including cement, brick, steel, tile, lumber, etc.—GEORGE C. STANLEY, City Engineer.

Calexico, Calif.

The maintenance program of Calexico has included grading and graveling 134 blocks with approximately 2,500 cubic yards of gravel, at a total cost of $6,000. All this work is being done under CWA projects with rented equipment.—T. R. BYL, City Engineer.

Cedar Rapids, Iowa

The street maintenance program in Cedar Rapids throughout 1934 will be merely a continuance of the regular street repair work necessary, with no special provisions. It will involve an expenditure of between $2,500 and $3,000 for materials.—F. E. YOUNG, City Engineer.

Cranford, N. J.

The budget for street maintenance in Cranford is estimated for 12 months ahead. The budget heading, "Roads," includes all labor and materials pertaining to the repair and maintenance of pavements, sidewalks, curbs, catch-basins, culverts, storm sewers and drainage ditches, as well as miscellaneous activities, some of which would not properly belong under street maintenance. The program embraces the maintenance of 10 miles of bituminous pavement, 10 miles of concrete, 4½ miles of township-maintained but unimproved highways, 4½ miles of drainage ditches, 3 miles of storm drains, 253 catch-basins and spurs, and 140 culverts. The work will be carried on by the township's regularly employed maintenance crew. The cost in wages has not as yet been determined, owing to the upset conditions in the wage scales this year. An agreement will be reached, however, before the budget is adopted. The choice of materials and equipment will be influenced to a large extent by the receipt of tax revenues. The necessary materials to be used in street maintenance this year in order to protect the investment in roads in the township will include 25,000 gallons of asphaltic oils for sealing penetration roads, 800 tons of ⅜-inch screening, 25 tons of concrete joint material, 300 tons of various sized crushed stone, 4 tons of calcium chloride, and 1,500 gallons of cold patch. Owing to the necessity of working within very small budget allowances, there will probably be no purchase of new equipment in the current year.—T. J. MCLAUGHLIN, Supervising Engineer.

Dumont, N. J.

The borough has appropriated $12,000 for a program in 1934, to be used for the maintenance of 13 miles of macadam streets. In addition, it is expected that Cresskill-Grand Avenue, for a distance of 2,000 feet, will be improved at an expenditure of about $10,000 with state aid.—THEODORE R. BOSWELL, City Engineer.

Durango, Colo.

The oil paving of 12 to 14 blocks at a total cost of $50,000 from funds allocated to Durango under the PWA will comprise the street maintenance program for the next few months. —A. L. KROEGER, City Engineer.

Englewood, Colo.

Englewood is doing about $20,000 worth of street grading under a CWA project. No other work is in sight for the present.—JOHN W. BLACK, City Engineer.

Eau Claire, Wis.

About $6,000 is to be expended in the next six months for the oiling of the streets in Eau Claire which are surfaced with gravel and shale.—A. R. GARNOCK, City Engineer.

Fair Lawn, N. J.

The 1934 program in Fair Lawn involves the expenditure of $15,000, divided as follows: labor, $5,000; oil and stone, $6,000; snow removal and incidental expenses, $4,000. The work this year will consist largely of maintenance, sealing old pavements and pouring all joints on concrete roads.—F. E. Harley, Borough Engineer.

Faribault, Minn.

The greater part of the maintenance program in Faribault is on Tarvia-treated streets. There is very little gravel surface left, and practically all the streets have been resurfaced with Tarvia, which requires resurfacing every other year on the heaviest-traveled residential streets. This year's program calls for the purchase of 30,000 gallons of Tarvia for resurfacing, and the expenditure of about $4,000 on the work.—Irwin F. Smith, City Engineer.

Flint, Mich.

The following tabulation shows the approximate budget allotments for Flint's fiscal year extending from July 1, 1933, to July 30, 1934, for maintenance of both improved and unimproved streets.

	Approximate Budget	*Expend. to Dec. 31*	*Balance*
Paved street repairs	$30,000	$25,000	$5,000
State trunk lines	15,000	10,000	4,500
Unimproved streets	24,000	14,000	10,000
Street cleaning	10,000	6,700	3,300
Snow removal	2,275	550	1,725

In most cases it will be noted that more than the proportionate share has been expended, but this was anticipated because of the immediate necessity for improvements which had been long neglected. It is believed that with the improvements and maintenance carried on as a part of the CWA activities, a normal amount of maintenance will be completed within the remaining available funds. The item of state trunk lines includes not only pavement repairs but all other expenditures for the maintenance of trunk highways. Cities in Michigan the size of Flint are reimbursed by the state in the amount of 50 per cent of these expenditures for this work. The program of paved street maintenance covers approximately 260 miles in addition to the state trunk lines, which have a total length of about 14 miles within the city. Unimproved streets include about 60 miles of gravel surface, 15 miles of cinder surface, and 235 miles of clay and sand roadbeds.

Very little street maintenance has been done during the past season using welfare labor, for our arrangement does not permit expenditures of welfare funds for the operation of budget activities. In many instances, however, welfare clients have been employed on a part-time basis and paid from budget funds. In connection with the CWA program, a considerable amount of graveling of road surfaces has been completed, and more of this is anticipated. In this way it is expected to reduce the expenditures for dirt street maintenance. The CWA work on pavement repair has not been very extensive, although we have received some benefit. It is not likely that any equipment will be purchased for the rest of the year. We have during the past few months added a number of service trucks to our maintenance crews to replace worn-out equipment, and have also added one truck maintainer for use on gravel street surfaces. The quantity of material to be used other than that for asphalt street repairs is small.—James R. Pollock, Dirctor of Public Works and Utilities.

Hamden, Conn.

There is no special program of maintenance in Hamden, other than the usual oiling or surface treatment and repairs as the necessity arises. Road work and relief are to a large extent being taken care of by CWA funds. Under existing conditions it is difficult to separate relief work and maintenance. The total of $70,000 is being expended for this work, of which $20,000 is money returned to the town from the state allotment for town aid projects. The purchases for the work have included tar, asphalt, road oils, sand and gravel, mostly paid for by the state under the town aid allotment.—F. Walden Wright, Town Engineer.

Harrison, N. J.

All street maintenance work under way at present in Harrison is being handled as CWA projects and will so continue for the next few months.—Frank McEvoy.

Hastings, Mich.

The Tarmac streets in Hastings will be resurfaced during the next six months at an expenditure of $7,900 and will involve the purchase of 25,400 gallons of bituminous material.—Bert Sparks, City Engineer.

Hazelton, Pa.

The regular maintenance repairs for approximately 30 miles of improved roads in Hazleton will be carried out during the next six months, involving the expenditure of about $20,000, including the purchase of approximately 12,000 gallons of cold patch tar and about 1,000 tons of stone chips.—Jerry Rough, City Engineer.

Hinsdale, Ill.

The city of Hinsdale will patch 38 miles of asphalt streets and seal-coat 80,000 square yards of asphalt streets at a cost of about $8,000. Seal-coating is done every four years. The material to be purchased for this work will include 25,000 gallons of tar, asphalt delivered hot in 1,000-gallon lots, and about 800 cubic yards of pea gravel.—R. S. Hopkins, Commissioner of Public Works.

Janesville, Wis.

The maintenance program in Janesville will consist of crack filling on the concrete streets and patching oiled streets, at a total cost of $5,000. This work will necessitate the purchase of two cars of road oil and one car of patching tar and cold patch.—Joseph Lustig, Jr., City Engineer.

Lebanon, Pa.

The city of Lebanon anticipates an expenditure of about $12,000 for repairs on its streets, necessitating the purchase of crushed stone and bituminous materials. Bids are to be taken about April 1 for the materials. There will be no new construction.—S. Allen McAdam, City Engineer.

Lock Haven, Pa.

Approximately $7,600 will be expended on general street maintenance in Lock Haven. Most of the city streets are maintained by the Pennsylvania Department of Highways, since they are on through routes.—R. Scott Kift, City Engineer.

Marshalltown, Iowa

The regular street maintenance program in Marshalltown will be continued this year from the appropriation, a small amount of asphalt being purchased.—F. S. Naiden, City Engineer.

Metropolis, Ill.

Plans are under way in Metropolis for the widening of 43 pavement intersections as a Federal project, at a cost of $61,000.—J. Thrift Corlis, City Engineer.

Midland, Mich.

Midland is planning that its entire street maintenance program will be carried on by County Road Commission equipment, the payment for it to be made from the city's share of the Horton Road Act money.—Karl B. Robertson, City Engineer.

Modesto, Calif.

The maintenance program for the next six months in Modesto will include the smoothing of all dirt alleys, the re-oiling of a portion of the dirt streets, and the repair of paved streets with 125 drums of Bitumuls, at a cost of $1,600 for materials. The city owns its oiling, patching and other equipment, and will purchase about six cars of road oil as well as the other materials necessary.—M. H. Crews, Assistant City Engineer.

Newton, Iowa

Street maintenance in Newton will consist of asphalt patch work involving the expenditure of about $1,800.—GRANT CARNEY, Superintendent of Streets.

Northampton, Pa.

The city of Northampton will spend $8,000 on its street maintenance program, which will include $1,500 for limestone screenings, $2,500 for cold patch, and $4,000 for labor.—HALE A. GUSS, City Engineer.

Oil City, Pa.

There is no single large item in the Oil City street maintenance program this year, since it will consist merely of routine patch work from the appropriation of $24,335, divided into $15,920 for payrolls, $5,850 for supplies and materials, $2,400 for repairs to equipment, and $165 miscellaneous. The purchases will include 10,000 gallons of tar, 2,000 gallons of asphalt, 50 cubic yards of ready-mixed concrete, and 500 tons of crushed stone.—B. B. WEBER, City Engineer.

Oregon City, Ore.

About 100 CWA men are being used on street grading and macadamizing in Oregon City. As this work was started after the 1934 budget was made up, there will be no other funds for street work this year. The total expenditure by the city for materials for the work outlined is about $3,000.—J. ROY STAFFORD, City Engineer.

Provo City, Utah

Graveling and grading about 10 miles of city streets in the outlying sections of Provo City, with CWA labor, the city furnishing the trucks and equipment at a total cost of $25,000, will be the entire maintenance program this year—ELMER A. JACOB, City Engineer.

Red Oak, Iowa

The city of Red Oak is relaying 12,000 square yards of brick pavement and filling it with asphalt. The total expenditure for this work is $12,000, of which $10,000 is for labor, and $2,000 for materials. The work involves the purchase of paving asphalt, cement, brick, fuel oil, sand and concrete mix.—ARTHUR E. J. JOHNSON, City Engineer.

Richmond, Ky.

Only the essential maintenance work on the streets of Richmond, including patching, will be done this year. The anticipated total expenditure will be $1,500. A shortage of funds makes it necessary to restrict all work to the absolute minimum. Some CWA work is being done on certain streets where the property owners are furnishing the material.—H. DEB. FORBES, City Engineer.

Rocky River, Ohio

The only work now going on in Rocky River is that under the CWA program, which will continue during the life of the Government financing. CWA labor is being used for grading, ditching and draining seven secondary streets, and it is expected that Westway Boulevard as well will be extended by grading, ditching and draining. About $7,500 is being expended on this work by the city. Recently the city took bids for a 3-ton truck equipped with a 5-yard drop side-dump body for the Street Maintenance and Repair Department.—W. L. SCHERER, Director of Public Service.

St. Charles, Mo.

Various streets in St. Charles are to be excavated and brought to grade through the use of CWA funds amounting to between $60,000 and $75,000. The city has purchased about $1,500 worth of materials for sewer construction, and does not anticipate more purchases soon. A mile of sanitary sewer was laid, and approximately ¾-mile of street graded, as well as about 30,000 cubic yards of earth moved. In addition, 50,000 to 100,000 cubic yards are to be moved in the next few weeks.—H. D. SMELSER, City Engineer.

St. Joseph, Mo.

No special program has been made or ordered made for St. Joseph. The maintenance program will include the work usually done by the Street Maintenance Department, at an expenditure of about $8,500 per month for labor and materials.—H. D. JUDSON, City Engineer.

Salem, Ore.

The maintenance of Salem's streets is taken care of by a special mileage tax, amounting to about $7,500 a year. The maintenance for the present year will consist principally of repairing water and gas cuts, for no new pavements have been authorized by the City Council.—H. M. ROGERS, City Engineer.

Seymour, Ind.

The resurfacing of Harrison Street, Shelbyville, after removing the existing five blocks of car tracks will be done by the State Highway Commission and by the city under the CWA or the PWA program.—CLYDE R. YATER, City Engineer.

Shelbyville, Ind.

The resurfacing of Harrison Street, Shelbyville, after removing the existing five blocks of car tracks, will be done by the State Highway Commission and by the city under the CWA or the PWA program.—CLYDE R. YATER, City Engineer.

Sioux City, Iowa

Owing to recent state legislation affecting the income of cities, the street maintenance program in Sioux City will be considerably less than that of recent years. Probably little or no equipment will be purchased.—PAUL D. COOK, City Engineer.

Springfield, Mo.

Because of financial stringency, only a very small street maintenance program has been planned for this year in Springfield, for all expenditures have been made up to the limits of the 1933-34 budget. The material purchases for CWA projects have amounted to approximately $10,000. The street maintenance program will not exceed $3,000 up to June 30.—JOHN F. HENDRICKSON, City Engineer.

Trenton, N. J.

Present indications show that all street maintenance in Trenton for the current year will be confined to wear-and-tear patching and the replacement of utility cuts. There has been no appropriation for any pavement reconstruction for the past three years, and there is little indication that there will be any in 1934. The city has a municipally owned asphalt plant which handles all the asphalt repair work. This type of work constitutes a very large percentage of the repair work on the city streets. The work is done as the need is apparent, and materials for the plant are purchased as required, and include asphalt cement, limestone dust, asphalt sand, etc. A rough estimate of the total amount of wear-and-tear maintenance that will be done in 1934 is about 30,000 square yards. There are 100 miles of paved streets in Trenton. In addition to the workers on asphalt repairs, the city has a force of pavers which handles brick block and other types of paving. It is not expected that any new equipment will be purchased in 1934.—JOSEPH E. ENGLISH, Engineer of Streets, Department of Public Works.

Uniontown, Pa.

About $10,000 will be spent in Uniontown within the next six months for the maintenance of unpaved streets and for oiling. In addition, three streets are being rebuilt with macadam under CWA. About 50,000 gallons of asphaltic oil is to be purchased for the maintenance program.—W. L. DUNN, City Engineer.

(To be continued in the April issue)

Heliopolis, Jewel City of the Sun

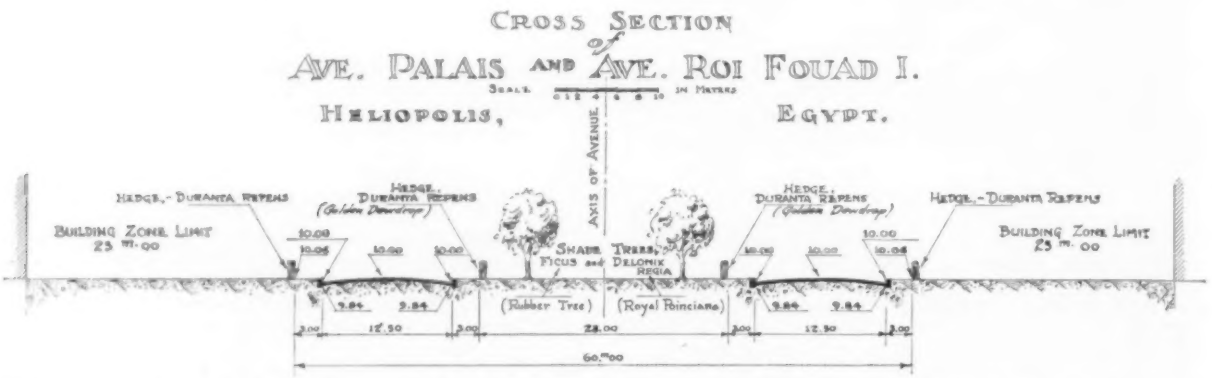
By P. H. ELWOOD
Head of Department of Landscape Architecture, Iowa State College

ON the border of the Libyan desert, twelve minutes from the city of Cairo by fast Metropolitan Electric trains (10-minute schedule), is situated the splendid modern municipality of Heliopolis, City of the Sun. The site is near that of the old city of the same name dedicated to the sun by the ancient Egyptians.

The new city is nearly 50 meters higher than Cairo. This fact, together with the purity and coolness of the air coming from the north, makes Heliopolis a great resort. Even during the hottest days of summer the people of Cairo flock to Heliopolis to enjoy the exhilarating cool northern breezes.

Egyptians call the town New Cairo or Masr-el-Guedida. Not far from here stands the celebrated ancient obelisk marking a rendezvous of Greek learning and scholarship. A half-hour journey from Heliopolis is to be seen the Virgin's Tree, a venerable gnarled sycamore planted in 1672 on the spot where the Virgin with the Child Jesus is said to have rested during the flight into Egypt.

Fortunately for Heliopolis, the site was recognized as ideal for a modern city, and was developed by men of artistic talent and great executive skill. This group of far-sighted Belgian gentlemen, led by Baron E. Empain, began the enterprise in 1905 by agreement with S. E. Boghos Pacha Nubar. The first General Manager of the company was Sir Reginald L. Oakes, Bart. Today what was a small oasis in the great rolling, moving desert is a modern suburb with broad, tree-lined, paved boulevards.



Progress Worthy of American Emulation

A list of the accomplishments of twenty-five years reads like magic, even to American readers accustomed to great projects expeditiously erected.

The orientation or the main axis of the whole scheme was centered on the Pyramids of Gizeh, over 15 miles away on the other side of the River Nile. The avenue was fittingly called Avenue des Pyramides. This broad boulevard has two paved roadways and a central park which is luxuriously planted with palms, royal poincianas, pomegranates, rubber trees and other tropical plants. At the termination of the avenue is Queen Elizabeth Square, in the center of which is the Coptic Cathedral.

At right angles at this point is the Avenue de la Basilique. This explanade is terminated on the east by the Villa Hindoue, which is the property of the Baron Empain. The villa is a rather fantastic, though effective, importation of Indian architecture furnished in the style of the Bourbons. Crossing the Avenue de la Basilique just in front of the Villa Hindoue is the most impressive avenue in Heliopolis, the Avenue des Palais, which becomes, after crossing Avenue Sultan Hussein I, the Avenue due Roi Fouad I. This magnificent avenue is nearly 200 feet wide (60 meters) with a broad park 29 meters

wide down the center (see cross-section). It extends far out into the desert, even beyond the residential zone. No building is permitted within 25 meters of the property lines.

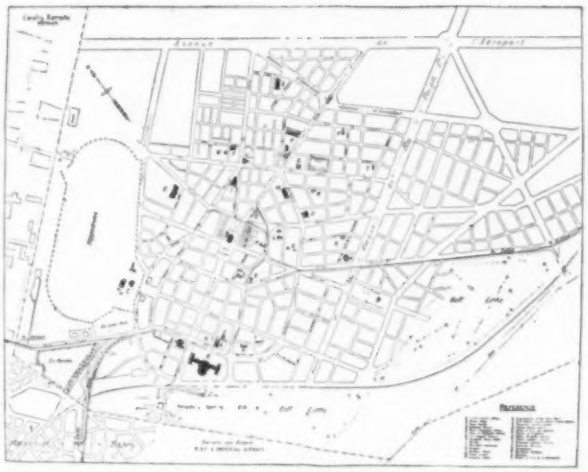
To us in America it is indeed encouraging that in Egypt —on the desert, in fact—people are glad to pay for beauty. Beauty and comfort are the greatest assets of Heliopolis. The central parking strips are more expensive than the paving, costing about 10 pounds ($50) per linear meter. This is due to the necessity of bringing in topsoil, which costs 15 piasters a cubic meter (about 75 cents) and has to be hauled 15 km. One hundred cubic meters are used to cover 500 square meters sufficiently deep for growing purposes.

The planting of the boulevards is very costly also. From the nursery at Gizeh near the pyramids, rubber trees (Ficus elastica) are purchased at from $2.50 to $5 each, and royal poincianas at $1.25 each. The pavement itself is laid in two courses on the sand, 25 cm. thick, with a crown of 1 in 60. Heliopolis has nearly 50 km. of paved streets. C. Hutois, the City Engineer, is largely responsible for the high standards of construction maintained throughout the city streets.

The cost of land is comparatively low and rents are cheaper in Heliopolis than in Cairo, consequently the Heliopolis Oasis Company has found it difficult, if not impossible, to keep construction ahead of demand. During the last five years the number of private apartments and homes has more than doubled. A six-room apartment on the ground floor, with kitchen and bath, rents for about 12 pounds ($60) a month. Labor and service are also economical. Probably Heliopolis has more automobiles than any other Egyptian city, having one car for every 10 of its 25,000 population. Besides the attractions of beautiful streets, fine air, and economical living, Heliopolis has many other advantages, including excellent schools and many fine churches.

Water Supply, Sewerage, Recreation

Heliopolis in 1927 distributed over 2,000,000 cubic meters of water through conduits more than 62 km. long. The water is obtained from a well 51 meters deep, and analysis shows it to be remarkably pure.



MAP OF HELIOPOLIS

No other city in Egypt has a drainage or sewer system as modern as that of Heliopolis. The sewage is treated and after being rendered innocuous is used to irrigate the cultivated fields nearby.

Among the most magnetic of all the many attractions of Heliopolis are the ample and diverse sport and recreational facilities. Here are accommodations for all tastes and habits, from golf to aviation.

Unlike most American cities, the architecture of the business district is in perfect harmony, being arabesque in character and a warm buff color. Very definite architectural control is exercised throughout the city, the plans being checked first by the local architect and then sent to Belgium for final approval.

The present General Manager of the Heliopolis Oasis Company, Victor Picher, has great vision and ambitious plans for the Heliopolis of the future, when it will express and justify even more fully its founders' dream of beauty.

HELIOPOLIS FROM THE HINDU PALACE

Economic Foundations of Low-Cost Housing

By FREDERIC C. HOWE
Consumers' Counsel

MANKIND seems to move by experiment and under economic pressure in making a decision as to what things must be done by all of us together and those things which may be done by private individuals for profit. With varying degrees of rapidity man seems to reach substantially the same decisions in different countries as to what should be public and what private.

Crassus and the Fire Department of Ancient Rome

Two thousand years ago in Rome the fire department was a private enterprise. It was owned and operated by Crassus, the richest of the Romans. When a fire broke out, Crassus rushed to the fire with his slaves to extinguish it, but nothing was done until the house owner appeared. Then there were bargainings over how much the owner would pay to have the fire put out. Ferrero, the Italian historian, tells about how it was done. At first the price was reasonable. As time went on, however, Crassus charged what the traffic would bear. In the end the price for extinguishing the fire was fixed at such a high point that the owner accepted a small sum and turned over the property to the fire department.

Neighboring house owners whose property was in danger were also called in by Crassus. They, too, were asked to pay to see that their property was not destroyed. They, too, paid all that the traffic would bear.

Now, the net result of this proceeding was that Crassus became the biggest landlord in the city of Rome. He took possession of a great part of the city. It is hinted by the historian that the slaves of Crassus started fires in order that their master might put them out. In any event, in a short time he became rich and powerful enough to be Rome's greatest money lender, and to divide the Roman world into the first triumvirate.

Modern states recognize the impropriety of entrusting the fire department to private hands. They converted it into a public service. The same evolution has taken place as to many other services. Sewers were at one time private. They have become public. The same is true of the water supply. To an increasing extent it is becoming true of electricity, power, transportation. Health is no longer a matter of private supervision. It is universally recognized as public.

Where Private Capital Fails, Public Action Becomes Essential

There is scarcely a state in Europe that has not come to recognize that private capital will not supply enough homes for persons of small means. Russia, Austria, Italy, Germany, the Scandinavian countries, England, are building homes with public credit. Even in extremely individualistic Anglo-Saxon countries this is true. And the reason is that low-rent houses do not attract private capital. When they do, they are jerry-built, unsanitary. Now, private capital will not venture into this field; first, because land values are too high; second, because building costs are too high; third, because taxes are too high; and fourth, because the income of the working classes is too low to pay a return on the capital cost. The public has been driven by economic forces into the field of low-rent houses. The universality of this change is proof of the necessity of viewing such housing undertakings as public utilities.

Now, there is a certain logic in public housing quite aside from its necessity, as there is a certain logic in the way it should be done. First, by virtue of their low wage scale the poor must live near their work. They cannot be commuters. That economic necessity creates high land values. These in turn make low-cost tenements unprofitable. It is high-cost land, rather than building costs, that forces the public into this field. This being true, either the workers or the community which does the housing should receive for its own uses the values which this situation involves. In other words, if workers are compelled by low wages to live in congested areas with artificial land values, they should have returned to them the values which they of necessity create.

Why Not Retain the Community-Created Land Values?

Now the land adjoining model low-cost dwellings is increased in value by these improvements. The owners are permitted to profit by this social investment. As to playgrounds, parks, street openings, land is assessed to pay for this advantage which some specially benefited property owners enjoy but which is not enjoyed by all.

Viewing this problem as a city entering upon a commercial venture should view it, not only should improvements be exempt from taxation, but all *land* benefited by such housing improvements should be taxed to recapture the benefit which such housing enterprises create.

A second obstacle to private adventures in this field is the high cost of credit; a credit which is much higher than in the case of large-scale adventures. Such credit can be secured only from public funds, either the funds of the city or the funds of some other public agency. Credit at three or four per cent is necessary to build such houses on a self-supporting basis, and low-cost credit can be secured only when the resources of the whole community are behind it.

If we exempt the house improvements from taxation, and place an additional tax on the land values created, and if we also provide low-cost credit, we can go a long way in public housing without loss.

Other Factors in Public Housing

There is a third factor in public housing, and that is the method of administration. And that, it would seem, can best be secured through non-profit corporations serving in a trustee capacity like the Port Authority of New York. Such a corporation is free from political inter-

ference. It is self-perpetuating. It attracts men who are willing to give a portion of their time to the public service. Endowed with the right to borrow, it enjoys all the powers which the community itself enjoys. In some instances the credit of self-liquidating corporations has a higher standing than that of the community itself.

There are other reasons, partly economic, partly social, which are advancing the movement for public housing. One is the consideration of health and hygiene. There are dangers in epidemics. Also the social costs of sickness and public relief. Just as we protect our water supply with the most concern, so like considerations lead us to think of similar precautions as to housing.

Public housing is not necessarily a debit account. It has social credits which overcome losses which the community may suffer. Merely on material grounds, the average large-sized community is justified in the serious consideration of public homes for the low-paid workers.

—From an address at the National Conference on Public Housing, held in Washington, D. C., January 27, 1934.

Per Capita Consumption— Is It a Reliable Measuring Stick?

Universal Water Meterage and "Unaccounted-for" Water Tell the Story

By **H. P. BOHMANN**
Superintendent of Water Works, Milwaukee, Wis.

THE general introduction of water meters began in Milwaukee in the year 1887. Prior to this only 871 meters had been installed. This number was nearly doubled during 1887, there being 1,728 meters in service at the close of the year. Today we have 93,348 meters in service. All services are now metered, excepting those supplying automatic fire sprinkling systems, the latter being controlled by a system of sealing and inspection.

The water consumption prior to 1887 had been steadily rising from year to year, until in the summer of 1887 it had reached within 5 per cent of the total pumping capacity of the plant, and within 2 per cent of the capacity of the intake. Meters were then placed upon the services of many manufacturers and places of business with a view to curtailing waste and relieving the embarrassment due to short supply and loss of pressure. The result was an almost immediate reduction in the demand for water, and conditions continued to improve throughout the fall and winter of 1887, until the diminution had amounted to about 8,000,000 gallons per day, which represented practically 40 per cent of the average daily consumption for the previous year. As a result of this reduction in pumpage, the daily consumption per capita was reduced from 113 gallons in 1887 to 102 gallons in 1888. With the installation of additional meters, the daily consumption per capita was reduced more and more with each succeeding year, until a minimum of 80 gallons per capita was reached in the year 1901. Since then there has been a gradual increase, so that last year the daily consumption per capita had reached 122 gallons.

Meters Increase Revenues

This gradual increase has been the experience of every large city. Some thirty years ago the average householder would install only a sink with one faucet. Today even the man of moderate means, in fact, the laboring man, installs a complete system of plumbing in his dwelling, including bathroom and toilet conveniences. All of this has a tendency to increase the daily per capita consumption of water. In a city like Milwaukee where there are many large industrial plants, with water bills ranging anywhere from $25,000 to $50,000 per year, the daily per capita consumption is of but little significance, for the reason that the large amount of water used by industrial plants greatly influences the per capita consumption. Our water revenues amount to more than 2¼ million dollars per year, of which 46 per cent is paid by 100 of the largest consumers. One can readily see what great influence this has on the daily per capita figure. As the business of these 100 consumers grows, the consumption of water keeps pace with the business and helps to swell the per capita figure. It is of no special significance whether our per capita use is 80 gallons or 130 gallons as long as the Water Department gets paid for what it furnishes. It is only by complete meterage that it is possible for any water utility to know this, otherwise it is working in the dark. Meters make it possible to tell very closely how much water is accounted for compared with the pumpage. Instead of watching the unreliable index of per capita consumption, keep an eye on the "unaccounted for" water and use every effort to reduce this item to the lowest figure. This appears to me a better and more scientific way of figuring consumption. Only universal meterage, of course, can make this possible.

When the daily per capita use was 80 gallons, the "unaccounted for" water was approximately 25 per cent. Last year, with a daily per capita consumption of 122 gallons, the "unaccounted for" water was only 9 per cent.

It is difficult to state just how much money has been saved by the city of Milwaukee through practically universal meterage, for this involves too many phases. It is certain, however, that the construction of the Riverside pumping station and the Linwood Avenue intake tunnel, involving an expenditure of over $5,000,000, would have been necessary twenty years earlier in order to supply the demand if universal meterage had not been adopted.

The Recent Trend to Municipal and Public Ownership

By **R. E. McDONNELL**
Burns & McDonnell Engineering Company, Kansas City, Mo.

THE urgent need of increasing municipal income, and the necessity of curtailing expenses, are leading many cities to seek reliable engineering information as to the cost of producing and distributing water, light heat and gas; and to inquire as to the reasonableness of the rates of their privately owned utilities.

The following table, compiled from the United States Census reports, shows how municipal ownership of electric light and power has grown during the years 1881 to 1932:

HOW MUNICIPAL OWNERSHIP IS GROWING
COMPILED FROM U. S. CENSUS REPORTS

Year	Municipal Systems	Private Systems	Total	Per Cent, Municipal to Total
1881	1	7	8	....
1885	16	151	167	9.5
1890	137	872	1,009	13.5
1895	386	1,690	2,076	18.5
1900	710	2,514	3,224	22.02
1905	988	3,076	4,064	24.3
1912	1,567	3,659	5,221	30.0
1917	2,318	4,224	6,542	35.43
1922	2,581	3,775	6,356	40.6
1927	2,198	2,137	4,335	50.7
1932	1,802	1,616	3,418	52.7

NOTE.—Although both municipal and private systems, particularly the latter, have declined in number since 1922, there has been a steady growth in horsepower installed. The horsepower in municipal plants has increased as follows:

1922	1,280,128 hp
1927	2,048,722 hp
1932	2,775,649 hp

The horsepower in municipal plants in 1932 was 5.8 per cent of the total horsepower in all generating plants, municipal and private, including plants used wholly for electric light and power service and also plants used partly for other utility services, such as street-railway power.

Diesel Engine Power a Factor

An important factor in the trend toward municipal plants has been the advent of the diesel oil engine. Its economy of operation, flexibility in adding units as loads increase, and adaptability for supplanting worn-out or obsolete steam units, the favorable terms of purchase on a basis of pledged receipts, revenue bonds, or payment out of monthly savings, all tend to force its recognition. Diesel-engine-generated power is now a real competitor of steam and hydro power brought in over long transmission lines with their inevitable line losses. In twenty years a growth of from one to thirty-two diesel engine manufacturing plants has occurred—one company having installed over 2,000,000 horsepower.

The economy of the diesel has not been confined to small installations. Its use has been mostly in cities up to 25,000 population; but, with the advent of bigger and better units, it is used in cities up to 75,000 or 100,000 population. Los Angeles has for several years used diesels, generating power for pumping water from wells; then, as the daily power load peak comes on, the diesel-generated power is transmitted to the city electric transmission system. With this excellent load and continuous service, the cost of generating electricity is even less than the cost of the hydro-electric energy from the Sierras. Many hydro-electric installations would never have been built had the economy of diesel engines been fully known at the time.

Our country's largest municipal diesel installation is now in operation at Vernon, Calif., a manufacturing suburb of Los Angeles. This installation is for five 7,000-horsepower units. Actual operating tests show they can expect a switchboard cost of less than 4½ mills per kwhr.

With diesels using crude oil, and oil available at reasonable cost in almost every state in the Union, the use of diesels has been growing rapidly. Over 1,200 installations are now in operation in this country, showing a remarkable growth in less than a decade. Their availability and high economy have made it possible for hundreds of cities to procure electricity at lower rates to their citizens through these municipally owned and operated installations. They have undoubtedly contributed in large measure to the present trend toward municipal installations. It is interesting to note that of the 90 cities that are running themselves entirely from the revenues of their municipal utilities a majority are procuring their city operating revenues through diesel economy.

Modernizing Steam Installations

While diesel power economy is being demonstrated, the builders of steam plants have effected economies even more remarkable. So rapid has been the development of steam plant improvements that a power plant of five years ago is out of date today. Steam pressures are going higher and higher, and boilers are getting bigger and better; and with super-heaters, pre-heaters and all the many power-plant refinements, including coal conveyors, pulverizers, powdered coal and ash-handling equipment, the cost of producing electricity has been going lower and lower.

A few years ago to produce a kilowatt-hour of electricity from 6 pounds of coal was considered a fairly good record. Now, to produce a kilowatt-hour with 1¼ pounds of coal is not uncommon. As an illustration of economy effected in the Kansas City, Kans., newest power plant, over $340 a day is saved in fuel alone over that of the former power plant; and the former plant has not by any means been considered inefficient. This saving of 60,000 tons of coal per year is only one of many economies of modern power-plant engineering.

Cities have shared these savings with their customers in lower rates. Companies have shared most of their savings with their owners, and have, unwillingly and reluctantly, and often after being forced by expensive litigation, granted rate reductions in proportion to the constantly lowering cost of producing electricity.

The low rates, good service and satisfactory net annual profits of hundreds of these larger municipally owned utilities have awakened the interest of alert city officials, and now we have many of the larger cities proceeding toward investigating rates and service and asking why they, too, cannot enjoy the low light and power rates of such cities as Los Angeles, Seattle, Tacoma, Cleveland,

Springfield, Lansing, Jacksonville, Toronto, Lincoln, Fort Wayne, Hannibal, Riverside, Colorado Springs, and about 2,000 other cities with well-managed municipal light and power plants. Many of these are competitive plants.

Examples of Large Cities

An interesting development has been the attitude of the metropolitan press and the interest and concern of the larger municipalities. Heretofore, smaller cities, of from 10,000 to 50,000, and even smaller than this, pointed the way—establishing such successful municipal light and power plants as to be used as examples in other cities. Now we have outstanding newspapers committed to the cause of public ownership as a solution of utility problems.

In St. Paul, one of the largest cities interested in municipal ownership of its utilities, when the franchises for electricity, gas and heating expired, new franchises were submitted to the public and were rejected by a large vote. Now the officials of that city have fortified themselves with a complete engineering report and estimate for the establishment of municipal utilities, and are proceeding toward the construction of a municipal light and power plant. A resolution has been passed unanimously by the City Council calling a bond election on March 6 for $10,230,000. This will cover a plant taking care of all municipal requirements—street lighting, city hall, courthouse and auditorium, with a sufficient capacity for at least 40 per cent of the domestic users of electricity.

Cincinnati, of approximately a half-million population, has through the municipal authorities investigated the question of rates and municipal ownership. A complete appraisal and inventory has been made of the electric utilities, discovering the fact that the city is entitled to a 37 per cent reduction in rates from its present rate schedule. Even this reduction would then only bring the rate to a fair and reasonable one that could be accomplished with a municipal plant. The city officials of Cincinnati are being urged toward a municipal plant through the filing of a petition by 35,000 users of electricity.

Milwaukee, under the leadership of Daniel W. Hoan, Mayor, has on five different occasions voted favorably on a referendum which has approved the construction of a municipal light and power plant. However, a sufficient majority has heretofore never existed in the Council that would permit the construction of a plant. Recently the Council, by a vote of 23 to 3, inaugurated proceedings for the establishment of a municipal light and power plant costing $15,000,000. This will provide for all municipal requirements, including street lighting, sewage pumping, schools and public buildings, and approximately 40 per cent of the domestic lighting.

Knoxville voted, on November 11, 2 to 1 for municipal ownership of its distribution system; the bonds of $3,250,000 being ample to take care of a complete new distribution system, including an underground system. On January 6 notification came from Washington, D. C., through the PWA, of an allotment and grant in the sum of $2,600,000. Other large cities that have authorized bond issues covering municipal light and power installations are Trenton, N. J., and Akron, Ohio.

A strong incentive to municipal ownership is the help of the National Government in financing. We now have through the NRA and the PWA assistance toward financing sound and worthy projects, and the policy of the Government in loaning to municipalities approximately 70 per cent of the cost of these utilities and making a free grant of 30 per cent has given hundreds of cities encouragement for the establishment of these utilities.

Among the cities that have already been notified of allotments and grants are Los Angeles, Knoxville, Fort Collins, Colo., Sacramento, Moberly, Mo., and others. Many of these utilities might be termed competitive, since the cities are being served by private companies.

With all the PWA funds allocated, the question now arises: Will Congress appropriate additional funds for at least carrying through the projects that have sought applications which are now pending before the PWA? If an additional appropriation is made, it will permit hundreds of cities to go through with the construction of their revenue-producing utilities.

The Municipal Water-Works Trend

In 1800 there was but one municipally owned water-works plant in the United States. Now there are 7,853 municipally owned installations, or 72.8 per cent of the entire number. We have in the United States 94 cities of over 100,000 population. All but 11 of these own their water works. Municipal plants serve 96.1 per cent of the population of the 94 cities, while private plants serve only 3.9 per cent. All the largest cities in America own and operate their water works.

Municipal plants have been setting the pace toward filtration, water softening, iron removal, and making water fit to drink. In 1900 the average death rate from typhoid in the United States per 100,000 population was 35.8. This has been gradually reduced through purification processes to 4.8 deaths per 100,000 in 1930. Of the 49 largest American cities of over 100,000 population with filtration plants, 45 of these are publicly owned, and only 4 are privately owned, showing that municipalities have taken the lead in water purification.

The average American family uses 5,000 gallons of water a month. This costs in the municipal plants $1.41, as compared to $2.24 in the private plants. The average family is paying 58.8 per cent more for the private water operation. For 100,000 gallons a month the municipalities pay $18.00. This quantity costs $27.77 from the private plants, or over 50 per cent more.

Congress Ponders Municipal Relief

ON its page devoted to "The Week in Washington," *Today*, in its issue of February 24, summarizes four methods of improving the financial condition of municipalities, under discussion in Washington:

"The first method is exemplified by the Wilcox municipal bankruptcy bill, modeled on the railroad bankruptcy act, by which municipalities would be empowered to reach agreements for scaling down and refunding their debts with substantial majorities of their creditors, without obstruction by recalcitrant minorities.

"The second method would involve the use of Federal funds for refunding maturities and buying new bond issues. Comptroller Morris S. Tremaine of the state of New York, who has bought many municipal bonds for the state sinking-funds, has been urging the Federal Government to support the municipal bond market by large purchases. In his view, that is the easiest way to restore municipal credit on a large scale, and he regards the prompt restoration of municipal credit as a vital step toward recovery.

"The third proposal would supply municipalities with current funds by the lending of Federal money on their tax arrears. The fourth, which is similar but more generous, would provide for the discounting of tax-anticipation warrants."

Incineration of Garbage at Spokane

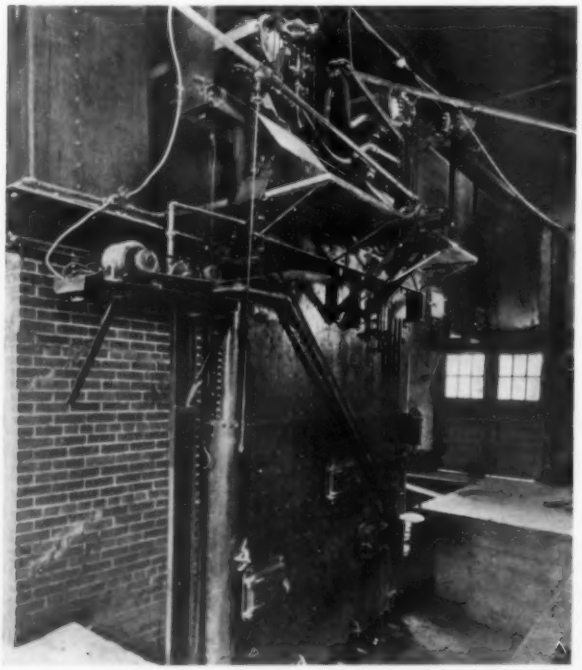
Disposal Costs Analyzed for Tests and for Entire Year

THE city of Spokane, Wash., disposed of its garbage in 1932 at a cost of $1.08 per ton and in 1933 at a cost of $1.09 per ton. These figures include operation, maintenance and depreciation of the incinerator. The Coe automatically stoked incinerator is capable of handling 96 tons of garbage in 24 hours. Actual runs of the incinerator, carefully checked and certified, show disposal of 43 tons in 11 hours and 40 minutes, and also in a 7-day period in 1931, during the canning season, 381,300 pounds, or approximately 190 tons, of garbage were thoroughly consumed at an actual cost of $68.96 for operation with the use of only 2½ cords of wood.

The city of Spokane disposed of 5,050 tons of garbage at the plant in 1933. This amount was not sufficient to keep the incinerator in full-time operation. The cost per ton would have dropped to less than one dollar with a sufficient volume to make it possible to operate the incinerator at anywhere near capacity. The tables on this page show the results of tests run.

Loosened Refuse Burns Rapidly

The distinctive feature of the Coe incinerator is the automatic stoking device, based on the principle that, given two piles of refuse of the same size and of the same material, with one allowed to burn undisturbed, while the other is disturbed with a fork to admit air and expose new surfaces, the latter will burn in one-half the time required for the first or undisturbed pile. The incinerator is provided with a water-cooled drying grate built in two sections, the stems of which project through the top of the furnace. Each section has a drum for water storage at the top. The design of the water grate is such that the circulation of water through the pipes of the grate is positive and rapid, thus insuring long and trouble-free operation.



A SIDE VIEW OF THE COE INCINERATOR AT SPOKANE, WASH.

At the top are shown the water-storage drums and the flexible tubing which carries the feed water to the drying gates. The small motor-driven pump at the left center circulates the feed water. The motor operating the mechanical stoker is seen at the top center of the furnace, and the combustion chamber is shown at the extreme right. At the left is the dry refuse chamber, which may be used if dry refuse is available, and the resultant heat used in drying wet garbage

INTERIOR OF THE SPOKANE INCINERATOR, SHOWING PART OF THE FIRING GRATE

The dry refuse chamber is shown at the rear and the water-cooled drying grate. To improve the circulation, the larger horizontal tubes incline slightly to the right or outlet side

Through a system of straight gears or racks and bevel gears the sections are hooked up to a worm reduction gear. A reversing variable-speed motor directly connected to the reduction gear provides the power to operate the drying grates. Since the grate sections are counterbalanced through the gears, a 3-horsepower motor easily handles the stoking device when the drying grates are loaded to capacity. As the motor revolves, one section of the drying grate moves up as the other section moves down. An adjustable switch automatically reverses the motor and hence the direction of drying grate travel.

Wet refuse is charged into the drying grate, and dry refuse into the dry refuse chamber. As the drying grate is suspended about 4 feet above the firing grate, it is evident

TEST No. 1

Total refuse burned on test		190.65 tons
Nature of refuse—garbage—77.6%, dry rubbish—22.4¼ by weight)		
Total furnace hours on test		57.75
Additional fuel used—2¼ cords wood	$11.93	
Total labor cost	57.03	
Total cost for labor and fuel		$68.96
Cost per ton for labor and fuel		.362

Ash residue 37,750 pounds or 9.9% of the weight of refuse burned

TEST No. 2

Total refuse burned on test		43 tons
Nature of refuse (garbage—72.7¼, dry rubbish—27.3%, by weight)		
Total furnace hours on test		11.75
Additional fuel use—1/3 cord wood	$1.79	
Total labor cost	13.56	
Total cost for labor and fuel		15.35
Cost per ton for labor and fuel		.357

Ash residue 8,150 pounds or 9.5% of the weight of refuse burned

that the heat from the dry refuse chamber must pass through and around the wet garbage suspended in the drying grate. With one section of the drying grate moving up as the other section moves down, the wet refuse is kept in motion, exposing a new surface to the heat with each complete cycle of drying grate travel. Thus the drying grate becomes a mechanical stoker as well as a support for the wet refuse. As it dries, the wet refuse falls to the firing grate, where combustion is completed. The drying grate can be operated at any desired speed, and the distance it can travel is controlled by the operator.

Of the $101.54 spent on repairs, only $7.54 was spent on the operating mechanism. This covered a thorough inspection of the electric control by an electrician and the replacing of two contact points on the reversing control. During about four months of the year the plant was operated at only 43 per cent of its rated capacity. For the rest of the year only enough garbage was received to make it possible to operate the incinerator at 30 per cent of its capacity.

COST OF OPERATION OF THE COE AUTOMATIC INCINERATOR, SPOKANE, WASH., FOR 1933

Depreciation	$1,964.79
Fuel	450.25
Supplies	255.20
Repairs (incinerator)	101.54
Repairs (building)	39.32
Light and power	65.90
Industrial insurance	59.22
Labor	2,577.30
Total cost	$5,513.52
Total tons consumed in plant during 1933	5,050
Cost per ton	$1.0918

This incinerator was designed by Harlan Coe, superintendent of the city crematory since 1921. Basic patents were granted to Mr. Coe in 1929 for this type of incinerator.

Dome Roof on Elevated Steel Water Tank

By **ARTHUR L. SCHMIDT**
Chief Engineer, Water Department, Youngstown, Ohio

A 500,000-GALLON elevated steel tank was installed by the city of Youngstown, Ohio, in its water-works system late in 1932 to serve what is known as the West Side high district. As this tank is located on high ground and is visible for a considerable distance, appearance was a dominant factor in the design of the structure. The tank is of the ellipsoidal-bottom type with a dome roof which is connected directly to the top of the shell. This design, which has been utilized on several other installations during the last few years, eliminates the customary eave and makes the roof a definite part of the tank as regards both capacity and appearance. Many people like the appearance of this design better than the old standard type with overhanging roof.

Water Distribution System

The water distribution system at Youngstown serves approximately 35,000 meters and 3,600 fire hydrants. It consists of 370 miles of 6- to 36-inch diameter mains, 3,500,000 gallons of storage in elevated tanks, 3,550,000 gallons storage in standpipes, and a 30,000,000-gallon reservoir. The city is divided into five districts, four of which are fed by booster pumps and the fifth by gravity from the 30,000,000-gallon reservoir located on a hill. Customers on the same hill as the reservoir and other high points in the district are served by the new elevated tank. The average daily consumption for the entire system is 9.6 mg with a minimum of 3.5 mg at night, and a maximum of 12 mg at peak load times.

The new tank has a capacity of 500,000 gallons and is 128 feet to the bottom. The shell of the tank is 51 feet in diameter, and the total range in head between the upper and lower water levels is 39 feet. The upper 10 feet of this depth is in the roof. The connections between the tops of the posts and the tank shell are welded. The entire joint on each post is made to one large plate, eliminating the necessity of placing the post connection over a joint in the tank shell. The column bases are also of welded construction throughout.

Dan Parish is Commissioner of Water at Youngstown, Ohio. The tank was furnished by the Chicago Bridge & Iron Works.

THE YOUNGSTOWN ELEVATED STEEL WATER TANK WITH ITS DOME ROOF

Publicly Owned Utilities, Private Power Interests, and the Proposed NRA Code

A Statement Published in the February, 1934, Issue of the Official Bulletin of the City-Owned Department of Water and Power, of Los Angeles, California

THE Bureau of Power and Light of the Department of Water and Power asserts that the proposed Code submitted to the National Recovery Administration by the privately owned electrical systems of the country is illegal, unsound, inequitable and ill-advised.

It is illegal in that the NRA does not require a Code for the electrical industry. The purpose of the Act is to promote "fair competition" and, in effect, it excludes those industries which are monopolistic in character. The electrical industry, by virtue of its nature, is almost wholly monopolistic. In a few localities there is a small amount of competition between publicly owned and privately owned systems, but that "competition," considering the country as a whole, is negligible. The only substantial "competition" is that which admittedly exists between the principle of public ownership and the practice of private ownership. Obviously, such "competition" is in no way related to the plan and purpose of the NRA, which seeks to improve labor conditions, spread employment and increase purchasing power.

The electrical industry already is regulated by the Federal, state and municipal governments under which its units operate. Any attempt at further regulation (except as to hours of labor and rates of pay, wherein the Bureau of Power and Light has voluntarily exceeded the President's requirements, as well as those of the proposed Code) would be a duplication of, or in conflict with, present regulations.

Seeking Control

Stripped of its embellishments, the proposed Code stands out, not as an instrument to increase employment or enhance the purchasing power of labor in the electrical industry, but as a weapon by which private companies seek to bring under their control all publicly owned systems, hamper their successful operation and prevent the establishment of additional publicly owned enterprises. This conclusion is supported by the historical conflict between public and private ownership.

On one hand are the publicly owned enterprises whose basic principle is to serve the consuming public more efficiently and to promote the comfort and the economic welfare of the people through more general distribution and availability of electric light and power at low rates.

On the other hand are private utilities, striving for earnings to justify excessive capitalization and seeking to prevent the establishment of publicly owned systems in additional communities.

Methods employed by private utilities to fight the principle of public ownership are often vicious and unfair. No expense is spared and no opportunity neglected to defeat that principle. This hostility is exposed by the subtle provisions of the proposed Code, which, if adopted, would give them a powerful weapon to coerce public systems.

In the event the proposed Code should be adopted, and if the publicly owned systems should *not* sign it, opportunities would be presented the private companies to spread misleading propaganda, insinuating that public systems were not cooperating with the President's recovery program; or to play for public sympathy, representing they were required to comply while public systems were exempt; or to employ such other representations as fertile minds might create to discredit the public systems.

Retard Recovery Program

If the proposed Code should be adopted, and if the publicly owned systems signed it, they would come under the domination, regulation and control of the Code Authority, represented by a membership of eleven to one in favor of private companies. Onerous by-laws, rules and regulations could be set up, modified and repealed at will; the Code itself could be changed; biased "hearings" held and prejudiced "audits" made. In view of the open hostility of private companies toward public systems, it is almost certain that these weapons would be freely used by the eleven private-company representatives on Code Authority, to override the one public-systems member and cripple the institutions he represents.

Obviously, it would be unfair, unnecessary and undesirable to place publicly owned systems in the same category with privately owned systems for purposes of regulation and control by Code Authority. To do so would impair their usefulness and seriously interfere with the success of the Administration's program of social and economic betterment. Also, it would retard the industrial readjustment made possible through the greater availability and lower cost of electric light and power furnished by publicly owned systems.

Publicly owned utilities are blazing the way for the development and wider distribution of cheap electrical energy. Wherever public ownership has gained a foothold, the consuming public has benefited either by more extended distribution, better service, lower rates, or by all three—as illustrated in metropolitan Los Angeles and as contemplated in the Tennessee Valley and elsewhere. Under public ownership labor has usually benefited in higher wages and better living conditions. Whenever there has been a movement toward the establishment of a public system, private companies have been forced to render better service, adopt lower rates, or do both.

Therefore, the adoption of the proposed Code, which would tend to hamper, reduce and impair the usefulness of publicly owned systems, not only would be detrimental to consumers and to labor but would impede the operation of the National Recovery program.

As previously stated, the Bureau of Power and Light already has complied voluntarily with the President's program for economic betterment, and is ready, willing and able to continue to do so. But it does *strenuously* object to the private utilities' plan which seeks to control public and private electric utilities under a Code inimical to the public interest.

The Bureau of Power and Light would, if necessary, accept a separate Code governing the activities of publicly owned systems of the country, in which they, as a separate group, would be permitted to work out directly with the Administration problems relating to hours of labor, rates of pay and to the improvement of economic conditions. In such event they should report directly to the President or to the Administrator, instead of being governed by a Code Authority composed of and dominated by private power interests.

Real Estate Values and Taxation

By J. M. CLEMINSHAW

DESPITE new forms of taxation, real estate will in all probability continue to be the chief support of local government. It is, in fact, the foundation of our local governmental system. Fundamentally it is sound and equitable—equitable in so far as the burden of taxation is distributed according to value, but there's the rub: what is value? Value is by no means exact, nor can it be.

The statutory value as a basis for taxation, as everybody knows, is the value established between "a willing seller who does not have to sell and a willing buyer who does not have to buy," or something equivalent. The courts have recognized that this definition cannot reasonably be applied to special purpose properties not readily sold on the open market, such as industrial and public utility. The sale of such properties, if sold as going concerns, usually includes going, or good-will value, franchise rights, patent rights and other intangibles. Frequently such transfers include the exchange of stock, so that the tangible value of a property cannot easily be separated from the intangible except by appraisal.

Only such properties as are capable of commanding competition between buyers, such as dwelling, apartment and small commercial properties, should be subject to the statutory definition. The valuation of these properties can generally be readily and accurately ascertained in almost any market. The land upon which the average run of small properties stand usually has a market value as established through sales and asking prices. Competition among contractors specializing in the building of houses and other small construction is usually so keen that the range between fairly considered competent bids is generally within 5 per cent. Appraised value of such buildings on the basis of reproductive cost less accrued depreciation, added to the value of land, will generally produce the statutory value, provided that fair consideration is given to location, adequacy, architecture, trend, recent fair sales and other influencing factors.

We hear of values qualified by the terms "reproductive," "sound physical," "book," "tangible," "depreciated," "going," "sale," "economic" and many other varieties of value quite confusing to the layman. In this connection it is well not to jump to a conclusion as to the meaning of appraised value, but rather to carefully consider the wording on appraisal certificates and secure an exact definition of the value in question.

Appraisal by Guesswork

A lot of so-called appraisals are merely opinions of value picked out of the air by some authority who is supposed to know all about the property appraised. The mental picture is of some wise old graybeard, or smart young bank appraiser, who stands on the sidewalk, takes a couple of squints at the building, does a bit of figuring on the back of an envelope and in the twinkling of an eye arrives at a value, just like a magician pulling rabbits out of a hat. This is altogether too true. Too many appraisals are made in this way, accepted as authoritative and used as a basis for taxation.

In the final analysis there is but one value that can be considered as a basis for taxation and that one is economic, if the term economic is synonymous with fair sale. Land values are entirely economic. A piece of land is generally worth what prospective purchasers in competition with each other consider it worth. A site for a business block, for instance, is worth its prospective future net earnings, predicated upon current income, capitalized at a rate commensurate with the risk. Please bear in mind that a lot of real estate has a poor prospective future, hence the necessity for carefully considering the trend. Any price paid for land above its sound economic worth is pure speculation. At the moment, however, our speculative bubble is sadly deflated. I am often asked the question, how much has real estate declined in value since 1929? What a poser! That is about as easy to answer as the question put in "The Autocrat of the Breakfast Table," "What is the cosine of Noah's Ark?"

Employment as a Factor

In some of the smaller towns of the country, dependent chiefly for their subsistence upon well-endowed colleges, it can be said (at this writing, December, 1933) that real estate as a whole has declined very little in value since 1929, perhaps less than 25 per cent. In other small towns, where the chief supporting industries have given up the ghost, the effect upon real estate has been terrific. With a high percentage of unrentable empty houses the market price becomes the proverbial song.

In the case of large cities the general decline seems to be in proportion to the kind of supporting industries. Industries engaged chiefly in the manufacture of consumer goods are, on the average, producing about 75 per cent of their output. Capital goods industries as a whole are producing about 30 per cent of the same year's output. This condition is reflected in real estate values.

In cities having well-diversified industries one can pretty nearly estimate the percentage of decline by districts. In the newer districts occupied by the upper middle classes land can be bought at 25 to 40 per cent of the 1929 price. Houses can be erected for 65 per cent of the 1929 price. Allowing for additional depreciation, improved residence properties that sold for $25,000 in 1929 can now be purchased on the open market for 50 to 60 per cent of that price. In the case of fine residence properties costing $100,000 or more the decline has been terrific, often 75 to 80 per cent. There are, of course, exceptions.

City business properties now on the market, generally referred to as "distress stuff," can be bought for 10 to 50 per cent of the pre-depression prices. In cities where the "distress stuff" has been pretty well disposd of and industrial activity is on the rise, business property values are becoming stabilized at a level fairly consistent with sound economic values, without much evidence of the speculative element.

An Optimistic Outlook

By and large, there is a pretty cheery note about real estate. The speculators have been washed out, less prop-

erty is being sacrificed, prices are firming up. Until the very recent past, prices were in such a turmoil that it was nearly impossible to set a fair sale value. Now, with the deluge of crashing prices apparently over and the financial sun peeping from behind the storm clouds of depression, it begins to look as though we shall again have a real estate market, albeit a humble and chastened one.

Prophets, predicters, presagers, or what you will, completely lost their prestige just before the bankers came in for their share of anathema. Despite that, I should like to risk the prediction that the next few years will see real estate re-established in the confidence of the people. Exchange values will generally be fairly sound, purchases will be based upon careful investigation and well-conceived appraisals, with speculation playing a very minor role. Prices will be higher than at present, but it will probably be a long, long time before we have conditions and prices comparable to those prevailing during the post-war decade.

But Not Too Optimistic

There are many reasons why real estate, land and buildings cannot reach a value much higher than at present. The first and perhaps most cogent one is that our rate of population growth is rapidly slackening. We shall very soon reach a point where population increase is negligible. We shall therefore have a limited demand for new construction.

Second, we already have such an over-supply of office and store space that it will be years before the demand catches up. Most of our factories have a great surplus of capacity. The least of our over-supplied construction is in the single-dwelling field.

Private construction will be chiefly remodeling and replacement of present obsolete buildings. A return to normal industrial production will mean that a goodly percentage of worn-out, obsolete and inadequate manufacturing plants will be abandoned and new ones erected, chiefly in the smaller towns. This decentralization will practically stop the growth of many cities, with a resulting reflation of real property values.

Under our Securities Act real estate securities should rapidly achieve the status of "gilt edge." We shall probably return to the pre-war conservative practice of investing surplus funds in well-improved property, and be satisfied with a 4 to 5 per cent net return on our investment—unless, as ironically pointed out by an architect suffering from the the present lack of demand for his services, the old speculative fever again seizes the country.

Valuing Special Purpose Properties

As already stated, the courts have recognized that the statutory value for local tax purposes cannot reasonably be applied to special purpose properties, the sale value of which is not readily ascertainable. Also in order to segregate the value of tangible real property from an established sale value of a property as a whole, as in the case of a manufacturing plant, an appraisal is required. This is a comparatively simple matter if properly prepared.

The valuation of land should include a consideration of present and future requirements, shipping facilities, class of labor available, asking price of comparable properties, and land improvements such as cut and fill, paving, drainage, fences, etc. Many companies find that they are encumbered with surplus idle acreage. Surplus land is not unlike surplus construction.

It should forever be borne in mind that the economic value of any building or group of buildings is the sum which the presence of those buildings adds to the value of the land upon which they stand. The summation appraisal has been ruled out by leading appraisal authorities. The carrying cost of valuable ground over and above that of an equally well-located site of nominal value, automatically reduces the value of the buildings. In other words, a given plant may be worth as much located on ground of reasonable value as the same plant located on highly valuable ground.

The next step in the valuation of a manufacturing plant is the computation of replacement value. There can be a lot of difference between replacement *cost* and replacement *value*. Replacement cost is the cost of reproducing a property item for item, obsolete and worthless features included. Replacement represents the cost of replacing a plant of the same floor space, or cubage if height is essential, as the one in question, of materials of equal life and quality or better, but with structurally obsolete features omitted. It is obvious that replacement value is almost invariably less than replacement cost.

It is sometimes objected that replacement value is inaccurate because there is often a spread of 25 per cent or more in contractors' bids on a given piece of work. However, as all experienced contractors know, there is generally a very small spread between the bids of competent and properly financed firms that submit honest bids. This spread on factory buildings is rarely over 10 per cent. Occasionally, however, a contractor will sacrifice all profit on a job in order to keep his organization intact. Sometimes the successful bidder is a better shopper than the others or he has an exceptionally efficient organization. In cities where unions are strongly entrenched a large contracting firm will seldom cut wages below the scale, even during a depression. Therefore little or nothing can be saved on this important item.

A replacement value based upon a carefully priced quantity survey represents greater accuracy than a contractor's bid, since it allows for actual materials and labor in place, plus a fair allowance for contractor's overhead and profit, plus architect's and engineer's fees. Analyzed unit costs of materials in place checked and tested by actual unit costs of materials of like kind and quality in new comparable construction cannot possibly result in seriously inaccurate replacement values; so much for that.

With the replacement value established, it becomes necessary to depreciate for physical wear, surplus construction, and inadequacy. Please note that structural obsolescence is taken care of in the computation of replacement value by the ignoring of unnecessary materials and obsolete features. Physical depreciation can readily be expressed as a percentage of the total. Inadequacy must be computed on an economic basis and surplus construction treated according to current requirements and possible future maximum needs. The remaining sound value of the buildings plus the value of the land, less a possible further deduction from building values because of a high land value, will produce a fair economic value, not only for taxation, but as a basis for cost accounting, sale, merger, reorganization and other purposes.

—The author of the foregoing article is President of The J. M. Cleminshaw Co., of Cleveland, Ohio, appraisal engineers.

FORWARD STEPS

Reported by
Municipal Officials, Chamber of Commerce Executives, and Others

A Recreation Department's Study of Avocations

CHICAGO, ILL.—The South Park Commissioners of Chicago, through the division of playgrounds and sports, are trying to find out what tools and materials, and ways of using them, are most applicable to having a good time with handicraft and hobbies, now that people have increased opportunity to develop skill in occupations they really enjoy.

The leisure which men have dreamed of since the day when the first machines were invented is becoming a reality. Our day-to-day experience tells us that the leisure-time problem is not merely a bigger problem but also a different problem than it has been before. It is a different problem because the matter of providing things for people to do has ceased to be a matter of providing for an idle hour. It has become a matter of providing for the idle day and the idle half-day, and to provide for these adequately will require different things than we provided yesterday.

We believe that the new leisure will be accompanied by a revival of interest, on a broad scale, in the hobbies and handicrafts which permit the development of artistic and manual skills—avocations which will hold the interest of people because a progression is possible from easy and simple techniques to difficult and complex techniques. We believe so strongly in the existence of this trend that we have set ourselves at the task of facilitating it by a systematic attempt to organize sources of information on avocations in such form that they can be made widely available.

From the Civil Works Administration a sufficient staff has been secured, supplemented by our own recreation department staff, to examine the literature in the fields most applicable to leisure-time uses. The literature is being classified, indexed, and evaluated with respect to a considerable number of criteria. It is being indexed, for example, with regard to:

1. The type of tools required to carry on the project, or hobby.
2. The materials required.
3. The cost of the tools.
4. The cost of the materials.
5. The subject: pottery, metallurgy, model airplane construction, quilting, kite making, marionettes, etc.

We have arranged to publish comprehensive bibliographies of selected literature, classified in ways to heighten the use of the references. References are classified, for example, with regard to the age group which would find the material to be of most interest, the sex to which the avocation would be most suitable, etc.

This work is now in progress. Visits, suggestions, criticism, and assistance are all welcome, and loans of recent books, in this field, from their publishers, for the period of this work, will be gratefully received.

The next step is to take certain creative projects and establish shops in which the actual production work is to be carried experimentally to definite conclusion. Each part of this process is to be illustrated in picture form by draftsmen, eliminating text instructions, as far as possible, in favor of graphic illustration. Then the drawings will be reduced to zinc etchings, and a series published as an illustrative manual, distributed at minimum cost; including in each manual as complete a bibliography as possible, referring the reader to the instructive or supplementary information which he needs after having advanced as far as our preliminary manual takes him.

V. K. BROWN,
Superintendent, Playgrounds and Sports.

Pulling Together for Good Government

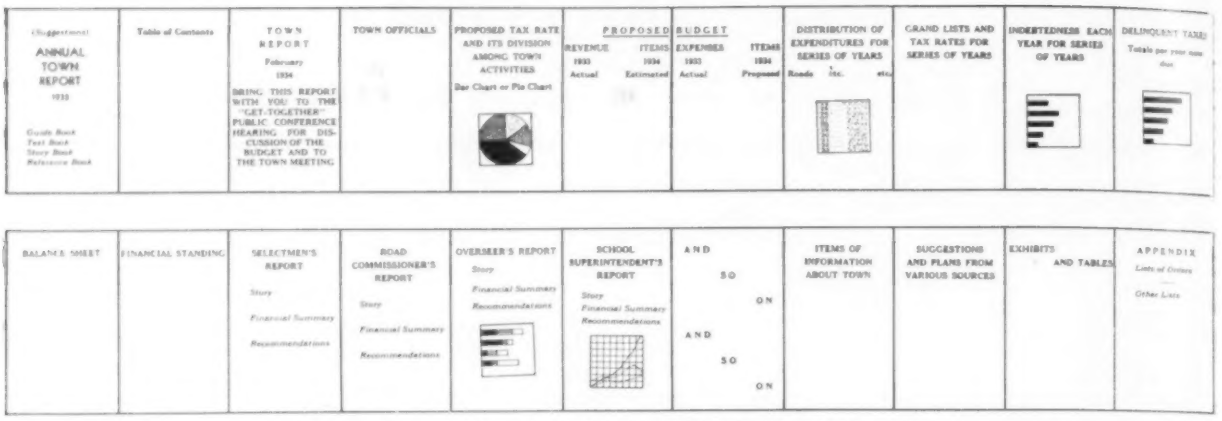
WINNETKA, ILL.—The basis of good municipal government in Winnetka is the village caucus—unofficial, non-political, but thoroughly representative: twenty-five members; two from each precinct, five chosen at large; rotation of about ten members every two years. The caucus ticket is usually the only one, and thus the ordinary political contest is avoided. This ticket presents the men whom the caucus considers best fitted for the respective offices—not in any case the man who seeks the job; and the work of selection is done long before the election: a lawyer for the head of the public safety committee; a banker or a business man with considerable experience for the head of the finance committee; and an engineer to head the public utilities committee.

There are twenty elective village offices, including the Village Council, the Park Board, School Board and Library Board. The Council—six members and the president—is the governing body. The village is an average community—made up of all kinds of people. Its successful administration is due to the decision by the people that they wanted good local government and to their pulling together to get it. Naturally, the type of citizen holding public office in Winnetka cannot give all his time to municipal administration. Therefore, since 1915 the village has had a manager—Herbert L. Woolhiser, a public utility engineer, a graduate of the University of Wisconsin, under whose management the municipal water and light plant has become a particular asset.

The electric light rates are the same as in the surrounding villages. Renewals and expansion are paid for out of the surplus set aside for that purpose. An 8 per cent dividend on the undepreciated book value of the electric utility property is paid by the light plant into the general fund on which the village is run—totaling since 1918 to March 31, 1933, $783,642. Our tax rate is 69 cents on $100, for municipal government only, with assessed valuation 37 per cent of full value. It does not include levies for schools and parks, nor the state and county levies. The total tax rate for all purposes is $5.41. No tax anticipation warrants have been issued. The cost of local government for the fical year ended March 31, 1933, was $17.23 per capita.

Some items of village improvements are interesting. A fine village hall, erected a few years ago, cost about $240,000, and was paid for out of the funds on hand, without bond issue. The former old-fashioned castle-like village hall was transformed into a handsome fire station, harmonious with the residential district in which it stands; financed with $40,000 cash on hand—no bond issue. The village has legal bonding power of $650,000, but has only $95,000 in bonds outstanding: for an addition to the public library in 1927, $53,000; for a new filtration plant in 1922, $42,000. On all special assessment jobs in Illinois the contractor must take his pay in bonds of the municipality. In Winnetka

THE MUNICIPAL SERVICE YARD, WINNETKA, ILL.



THIS MIDGET THUMB NAIL TOWN REPORT OFFERS SUGGESTIONS

all such bonds have been retired at maturity with interest. This being known, contractors bid lower.

Centralized management under the council-manager plan permits various economies that total commendably. Salary cuts have been from 5 to 15 per cent, based on a study of the individual case—a smaller cut for the man who had taken on additional work without being paid for it. In purchasing, only if prices are equal, does the local man get the business. Employees who are temporarily idle in one municipal department are shifted to another that needs extra hands. The municipal service yard, shown in the photograph on page 69, was built with paving bricks from a torn-up street, saving about 5 per cent of the total cost of the yard. Here the motor-vehicle equipment of the village and the School Board is serviced.

Workers are advanced in rank and pay if they deserve it and such advancement is possible.

WILLIAM B. MOULTON,
President of the Village.

A Town Report Competition

BURLINGTON, VT.—The Vermont State Chamber of Commerce is sponsoring a new kind of competition in its work on local finances and local town reports: a competition in town reports of the year 1934 from Vermont towns in six population classes from less than 1,000 to over 5,000. The call for this undertaking is based, not upon a negative condition of lack of merit in existing reports, but upon the progress that has already been made in this matter, involving new and helpful features that ought to be encouraged. The cooperation of a sister state has been solicited by inviting the Governor, the State Comptroller, and the State Tax Commission of New Hampshire to serve as a Committee of Award.

The points in the contest are: (1) the setting up of a budget; (2) presentation of balance sheet and financial status; (3) schedule of distribution of expenditures over a series of years; (4) graphic display of financial facts through the use of bar charts, graphs, etc. The committee in charge has sent out to the towns a budget sheet form which it is hoped will be suggestive in respect to point number 1, and in recent weeks an edge has been put on our suggestions by the distribution of the Midget Thumb Nail Town Report herewith reproduced. Seventy towns have responded to the announcement, and have declared their intention to submit copies of their reports.

JAMES P. TAYLOR,
Secretary, Vermont State Chamber of Commerce.

EDITORIAL NOTE.—"Suggestions Regarding the Preparation of Municipal Reports" is an 8-page pocket-size pamphlet, prepared in question and answer form for the Vermont State Chamber of Commerce, by K. R. B. Flint, Director of the Bureau of Municipal Affairs, Norwich University, Northfield, Vt. Apply to the State Chamber, Burlington, Vt.

Kenosha's Annual Letter

KENOSHA, WIS.—The annual letter from the City Council of Kenosha to the citizens states plainly the cost to the taxpayer of the services he receives, and what is done when tax collections are insufficient to meet the local standard of living; how emergency relief is provided; what the bonded indebtedness is, what it covers, and how it is being paid off; also the estimated expenditures for the ensuing year. These details are presented in a pocket-size 6-page folder. The letter of December 12, 1933, includes a straightforward tabular arrangement of the various essentials and comforts that each $100 in taxes bought from the city for the taxpayers of 1933, shown in the accompanying reproduction. The column of costs per month is particularly illuminating—the safety services seeming at least reasonable: health, 11 cents a month; police, 37 cents; fire prevention and control, 30 cents; waste collection, 11 cents; street lights, 18 cents.

If, as he studies this table, the tax-conscious citizen tries to list things he could do without, he will find himself becoming civically and socially conscious in the face of a difficult situation.

H. C. LAUGHLIN,
City Manager.

A Wonderful Opportunity for City and Regional Planning

DALLAS, TEXAS.—In North Texas, twenty counties, every town, and many rural districts are being lined up by the Kessler Plan Association, of Dallas, to realize their aspirations for development. A letter is being sent out by the Association to representatives of communities and counties, from which the following is quoted:

"For years you have had visions of a beautiful, well-planned, orderly developed city, town or county. You wanted these finer things, but felt that because of the cost your community could never have them.

	PER YEAR	PER MONTH
Library	$ 2.39	$ .20
Waste Collection	1.29	.11
Public Schools, including principal and interest on school bonds	41.83	3.48
Vocational School	2.53	.21
Street Lights	2.18	.18
Street Sweeping—Repair of sidewalks and curbs on public property—Repair of Bridges and street signs—Snow removal from streets and public sidewalks—Weed cutting on public property—Repairs on 93 miles of street pavement and maintenance of the other 54 miles of streets—Cleaning catch basins—drinking fountains—Cutting off and rounding of curb corners—City garage and repair of city cars and trucks	2.46	.20
Parks and Playgrounds	1.57	.13
City Council—Finance Dept.—Purchasing Dept.—City Manager's Dept.—Assessing Dept.—Elections—City Hall	1.87	.16
Health Department	1.31	.11
Engineering—Building Inspection—City Sealer—City Planning	.79	.07
Police Department	4.39	.37
Fire Department	3.62	.30
Hydrant Rental	2.24	.19
City's Share of Maintenance of Municipal Court—City Attorney's Office—City Auditing	.39	.03
County	15.88	1.31
State	2.46	.21
Principal and Interest on city bonds and land contracts	2.10	.18
Outlay—Maintenance of Rental property, Airport, etc.	.83	.07
Recreation	.48	.04
To pay back $125,000 borrowed to finish out last year, due to added relief costs	4.01	.33
City's share of unemployment relief	5.38	.45

WHAT $100 IN TAXES BOUGHT IN KENOSHA IN 1933

"Here is your chance to see your dreams come true.

"In Fort Worth—School and Park Boards are cooperating; ½-million CWA funds spent in beautifying school grounds; magnificent park system being developed.

"In Dallas—Park Board carrying out city-wide park beautification program; school grounds being beautified; county government cooperating with little towns and rural schools; one little town has $24,000 beautification program, another has $115,000 beautification program; park land being donated in little towns and rural communities. Dallas County motto—Bring beauty to the little town and rural school.

"In Grayson County—250-acre county park being developed.

"In Celeste, Hunt County—plans ready for town-wide beautification program as soon as CWA funds available."

In all this we are cooperating with the Advisory Board, Texas Civil Works Administration, of which Gutzon Borglum is Chairman, with offices in Austin, Texas.

JNO. E. SURRATT,
Secretary, Kessler Plan Association.

Why Pay Taxes?

JACKSON, MISS.—Presenting services of good government for sale at the bargain counter in the City Hall of Jackson, the Mayor and Commissioners of this city have distributed to the citizens a pocket-size 8-page pamphlet describing the products of this cooperative industry "in which each purchaser shares in all dividends."

The citizens are approached as directors of this community enterprise, who also, as taxpayers, go shopping collectively for the necessities of water, sidewalks, streets, fire protection, police safeguards, garbage disposal, schools, library, street lighting, "and many other things that no lone shopper could find at any price he could afford."

The total per capita cost for city service to Jackson citizens in 1933 was $15.60—27 per cent less than for 1932; 45¾ per cent less than for 1929; and "less than the price of a suit of clothes." Let us examine some of the items, for which each citizen paid less than the price of the commodity mentioned:

Lighting streets and public buildings—51c—a shirt

Street Department maintenance—39c—a pair of socks

Fire Department service—$1.38—a cheap hat

Municipal auditorium maintenance—1c—a post card

Garbage collection—50c—a necktie

Health Department operation—15c—a box of pills

Library Department—10½c—a fraction of the cost of a book

Police Department, 5,000 arrests to safeguard life, property and public welfare—4c—a package of chewing gum; patrolling all city streets to prevent crime—$1.03

"A merchant who paid only $20.10 for all city services, including fire protection, police patrol, schools, and everything else, admitted that one street lamp near his store was worth $60 a year to him."

In this pamphlet are featured the savings that have been made to each taxpayer by community purchasing, over what he would have had to pay for private health protection and dentistry; also the immense amount of inspection done by city forces to secure reasonable insurance rates, safe plumbing, wholesome and clean foods and milk, pure drinking water and the sanitation and health of food handlers.

"Let us impair a single governmental agency such as our water works, our health control, our streets, or fire and police protection, and the citizens will suffer losses of things that never could be measured in terms of dollars and cents.

"We hope this little pamphlet will show you that City Service as provided by your local government is something more than the cold, metallic tapping of tax tabulators in a well-ordered system of shaking down the taxpayer."

Thus, with many other details of quality and price, the city administration of Jackson is displaying the necessities furnished the taxpayers.

WALTER A. SCOTT,
Mayor.

Two Views from a Coming Exhibit of Landscape Architecture

These photographs of the Recreation Building and Garden of Lincoln Park, Jersey City, N. J., are among the many fine views of public and private landscape architecture to be shown by the New York Chapter of the American Society of Landscape Architects, March 20-31, at the Architectural League Club House, 115 East 40th Street, New York.

Frederic C. Hoth and Paul B. Schumm, Landscape Architects and Engineers

Will Municipal Generating Plants Increase?

REVISED figures for the number of municipally owned electric light and power plants are given by Paul Jerome Raver, Assistant Professor of Public Utilities, Northwestern University, and Director of Rates and Research, Illinois Commerce Commission, in the February issue of *The Journal of Land and Public Economics*. The number at the beginning of 1933 is stated as 1,849, compared with the 1,885 previously reported by Professor Raver and 1,802 as found for the year 1932 by the Bureau of the Census, on a somewhat different basis (see THE AMERICAN CITY for January, 1934, page 64).

Of the 1,849 municipal establishments, 944 purchased all power distributed, 809 generated all, and 96 generated part, there thus being 905 generating plants. The latter number represents an increase of 3 from the number at the beginning of 1932, a reversal of the downward trend in number (but not in total generating capacity) since 1922; and Professor Raver points to Federal assistance for the construction of municipal plants, through the PWA, as a factor that tends to add to their number and the results of which may be expected to be particularly evident in 1934. He also, however, calls attention to large public hydroelectric power projects, as in the Tennessee Valley, that create a tendency away from local power plants, similar to the tendency a few years ago when private transmission systems were being widely extended; and he leaves the inference that the long-term trend is toward such systems, public or private.

There is, however, much to be said counter to this assumption. T. A. Burdick, consulting power engineer, states:

"There are various reasons why systems have continued to spread out and interconnect, but they are not all economic. Paradoxically enough, competition on the one hand and consolidation of companies on the other have both tended to stimulate the movement. The physical effect of the movement is to increase the concentration of generating capacity at certain points and to separate the customer further and further from the generating plant. Concentration of generating capacity in many large systems has long since passed the point where it resulted in lowering of investment cost per kilowatt of customer demand. It has likewise passed the point where reduction of generating cost per unit of energy produced has resulted, and now continued improvement in generating efficiency will have but negligible effect in reducing service cost."

H. M. OLMSTED.

A Water-Supply Industry Code

A NUMBER of privately owned water companies, through the Institute of Water Supply Utilities, Inc., an organization formed for that purpose, have drafted a Code of Fair Competition for the water-supply industry. This Code is now awating action of the National Recovery Administration, and a hearing was held February 20, 1934, before Deputy Administrator Leighton H. Peebles.

The proposed code makes mention of municipally owned water-supply organizations and offers to them the opportunity of subscribing to the Code and of being represented on its Code Authority. The Code is printed in full in a pamphlet entitled "Proposed Code of Fair Competition for the Water Supply Industry" issued by the Federal Government, and copies may be obtained from the Superintendent of Documents, Washington, D. C., at 5 cents a copy.

Malcolm Pirnie, until a month ago a deputy administrator of the NRA on the codes for the construction industry, and President of the American Water Works Association, has appointed a committee of the Association on the Water Supply Industry Code. This committee is made up of men whose work has bene identified mainly with publicly owned water supplies, and has been organized to promote the following purposes:

1. To discuss the relationship of municipally owned water utilities to the proposed Code of Fair Competition for the Water Supply Industry.

2. To cooperate in every way possible with the private water companies in the operation of the Code.

3. To study the problems presented by the Code from the standpoint of municipally owned utilities in the hope that they may in large numbers be permitted to subscribe to the Code and aid in the general advancement of the industry as a a whole.

4. To search for and act upon any opportunities which there may be for proper recognition of water-works personnel in its important service to communities. There may be in the Code for the Water Supply Industry a possibility of aiding in establishing continuity of trained personnel.

The membership of the Committee is as follows:

William W. Brush, *Chairman*, Chief Engineer, Department of Water Supply, Gas and Electricity, Municipal Building, New York.

William G. Bank, Assistant Engineer, Bureau of Water, Newark, N. J.

Franklin Henshaw, Manager, Water Department, Scarsdale, N. Y.

William W. Hurbut, Water Distribution Engineer, Department of Water and Power, 207 South Broadway, Los Angeles, Calif.

A. B. Mauzy, Chief Engineer, Bureau of Water, City Hall, Jersey City, N. J.

S. M. Van Loan, Deputy Chief, Bureau of Water, 709 City Hall, Philadelphia, Pa.

A. V. Ruggles, *Secretary*, Assistant to Secretary, A.W.W.A., 29 West 39th Street New York City.

Chairmen and Consultants of State Planning Boards

EXTRAORDINARY progress has been made in the appointment of State Planning Boards since the project for stimulation of state planning through the National Planning Board was approved on November 23, 1933. Up to February 21 word had been received in Washington from the Governors of 31 states of the actual appointment of such boards, and several others had indicated their early intention of taking similar action.

The list of the 31 states follows, with the names of the Planning Board's chairman and consultant, if already announced.

ALABAMA
ARIZONA
ARKANSAS
  Chairman, George W. Donahey, Little Rock.
CALIFORNIA
COLORADO
  Chairman, Hon. John T. Barnett, Denver.
  Consultant, Irvin J. McCrary, Denver.
CONNECTICUT
  Chairman, W. L. Slate.
  Consultant, George H. Gray.
FLORIDA
  Chairman, Hon. Fred C. Elliott, Tallahassee.
GEORGIA
IDAHO
ILLINOIS
  Consultant, Jacob L. Crane, Jr.
INDIANA
  Chairman, John Wheeler.
KANSAS
KENTUCKY
MAINE
  Chairman, Judge William H. Ingraham, Portland.
MARYLAND
  Chairman, Abel Wolman.
  Consultant, Irving C. Root
MICHIGAN
  Chairman, Claude S. Carney.
MISSOURI
  Chairman, Prof. R. W. Selvidge, University of Missouri.
MONTANA
  Chairman, J. S. James.
NEVADA
NEW HAMPSHIRE
  Chairman, James M. Lengley, Concord.
  Consultants, John Nolen, Justin Hartzog and Geoffrey Platt.
NEW JERSEY
  Chairman, Charles P. Messick, Trenton.
  Consultant, Russell V. Black, Princeton.
NEW MEXICO
NEW YORK
OHIO
  Chairman, Dr. Walter J. Shepard, Ohio State University.
  Consultant, L. Segoe, Cincinnati.
OKLAHOMA
  Chairman, Ed. McDonald, Oklahoma City.
OREGON
  Chairman, Charles M. Thomas, Salem.
SOUTH CAROLINA
  Chairman, J. E. Sirrine, Greenville.
UTAH
VIRGINIA
  Chairman, Morton L. Wallerstein, Richmond.
  Consultant, Irving C. Root.
WASHINGTON
  Chairman, E. F. Banker.
WISCONSIN
  Chairman, William E. O'Brien, Madison.
  Consultant, Jacob L. Crane, Jr.

Improving Municipal Administration

Current Items from the Public Administration Clearing House

Cities and Tax Limitations

A SYMPOSIUM on tax - limitation laws*, just published by Public Administration Service, points out that nearly all states have had these laws at one time or another. Considerable legislation of this type has been enacted this year.

Daniel W. Hoan, Mayor of Milwaukee, sees tax limitations as necessitating one of two alternatives: (1) making up the deficiency in a city's tax revenue by increasing revenues from other sources; (2) curtailing, sometimes eliminating, important municipal services.

For the first of these, Mayor Hoan says, there is little hope, since new sources of taxes for cities are quite unfeasible in these times. With regard to the second, he questions the economy of having to turn over public service to private enterprise, when the former has proved cheaper. Other objections he raises are: that tax limits lead to bonding or to temporary borrowing, which is bad practice; that boosting real property valuations, another expedient used, merely negates the tax-limit.

Clarence A. Dykstra, City Manager of Cincinnati, points out that needs of cities vary. With a fixed state-wide tax limit there is no freedom to accommodate, not only the difference in needs, but the difference in taxable wealth and available revenue. Another unfavorable characteristic is that the tax limit does not limit the total of taxation, but encourages resort to other types of taxes. This brings nuisance taxes upon municipalities if they would continue their public services.

Patient investigation of the "'ultimate resting place of tax burdens, and of the relations of the city, state and national government in the levying and sharing of taxes and in the division of work," Mr. Dykstra asserts, "will do more toward bettering government than tax-limitation laws can ever be capable of doing."

Eighteenth Century Government in 1934

TOWNSHIP governments have outlived their usefulness. The 21,000 townships in the 23 states that permit them do not fill an essential place in the general scheme of local government and should give their present duties over to a larger unit, such as the county, which can more efficiently and economically carry on the functions.

This is the conclusion of the Cincinnati Bureau of Governmental Research, after a case study of Hamilton County, Ohio.* Taken as a key to the situation throughout Ohio, where townships have existed since 1787, it is also a sign of the general status of the township over the country.

Rapid development of urban and semi-urban communities within township boundaries of Hamilton County—from a total of 10 incorporated cities and villages in 1890 there has been an increase to 6 cities and 19 villages—has resulted in more than 100 political subdivisions, with a total of 97 different rates of taxation. There are 13 townships in this specimen county.

The report makes the point that there are only two major functions of townships in Ohio—maintenance and construction of township roads and administration of outdoor poor relief and health and hospitalization of indigents. The former of these has been centralized more and more toward a county function. With the emergency, the latter has also been necessarily taken over in large part by the county.

There are 1,359 townships in Ohio, the number within a single county varying from 6 to 28. The area of each township approximates 30 square miles, and the population, exclusive of cities and villages, is rarely in excess of 1,000. The cost of administering these many divisions may be estimated from the sample figure of Hamilton County, which was $197,206.69 for 1932.

Standardizing Municipal Audits for Quality as Well as Quantity

"FREQUENT statements have been made that the financial affairs of cities would be in better condition today if their accounts had been audited regularly," comments Carl H. Chatters, Executive Director, Municipal Finance Officers' Association, in the current issue of *Municipal Finance*.

"Survey of 213 cities of 30,000 or more population has shown, however, that nearly 80 per cent of the cities in the United States have annual or more frequent audits of their accounts. In view of this proof, it seems that attention should be directed to the quality of the auditing and the results obtained from it."

The National Committee on Municipal Accounting, recently organized, is making its first project a standard program for municipal audits.*

Auditing procedure differs widely in the 213 cities reporting in the survey made by the Municipal Finance Officers' Association. Private agencies are engaged by 120 of the cities to make their audits. In 22 of these, audits are made either quarterly or monthly; in the rest, annually. State agencies make the audit in 47 cities. Forty-six cities have no independent audits or have them only irregularly.

Some states reveal a definite trend toward having all audits of cities made by private agencies. In a number of these the audit is required by statute. In others it is provided for by the city charter, and in still others it is voluntary. Nevertheless, among the cities reporting, all of the 13 in California, where the audit is voluntary, and all of the 18 in New Jersey, have annual independent audits. Others following the same practice are the 14 Michigan cities (except Detroit and Dearborn); 12 to 14 Texas cities; and 9 of the 10 Illinois cities.

Audits of local accounts are made by a state department in Indiana, Iowa, Massachusetts, Minnesota, New York, Ohio, Washington, West Virginia and Wisconsin. In New York and Wisconsin the cities may engage private accountants, and state audits are said to be infrequent. The audit in Indiana and Ohio is almost continuous and to some extent is a pre-audit of expenditures.

Public Forums Draw 90,000 in One Year in Des Moines

ENLARGING the crowd around the general-store stove to accommodate modern needs, the city of Des Moines, Iowa, has just completed a year's experiment with public forums as a mode of adult education in current events. The meetings were held 37 weeks of the year, and the total attendance reached 90,297.

Three types of forums are conducted, according to Carroll H. Wooddy, resident forum leader, who describes the plan in the February issue of *Public Management*, official journal of the International City Managers' Association.

Neighborhood forums, held in school buildings, are in charge of resident forum leaders. *Central* forums, held in high school auditoriums, engage leaders for short periods of five or six weeks, during which a connected series of topics is presented. *City-wide* forums, held since last September, are addressed by visiting lecturers.

Topics of current interest in the fields of economics, politics and foreign affairs provide meat for the neighborhood and central forums. The leader makes an address of 45 minutes to an hour. Free discussion between leader and audience follows. Exchange of views on news of the day often precedes or accompanies discussion of the announced topic. City-

* See Department of Municipal and Civic Publications, this issue.

* See THE AMERICAN CITY for February, 1934, page 48.

wide forums, because they are larger, follow a slightly different plan.

"Local observers, not connected with the forum enterprise, have declared that the impact of forums upon those who have attended with some regularity has been tremendous," says Mr. Wooddy. "The estimated forum constituency is from 10,000 to 15,000 in a population of 143,000. This includes, however, a sampling of every social and intellectual level."

The Des Moines experiment, financed by annual grants of $25,000 from the American Association for Adult Education, was the idea of John W. Studebaker, Superintendent of Schools. Mr. Studebaker heads the work, which is supervised by the Board of Education.

"Put Housing Into Politics to Get Action," Advises Leader

FEAR of putting housing into politics is responsible for the delay in getting housing programs under way. Ernest J. Bohn, President, National Association of Housing Officials, says this is why legislation for public low-cost housing has not been passed in a greater number of states.

"We must put slum-clearance and low-cost housing into politics if we want action," Mr. Bohn says. "The only solution to our housing problems is actually to interest governments in the subject. To do this, we must interest our political parties and our statesmen to incorporate it in their platforms."

Putting housing into politics should not necessarily lead to its abuse, Mr. Bohn believes. The improvement of government, rather than keeping it out of activities it should be in, is the problem facing our country today, he says.

"Federal money is now available for clearing up slums and building low-rent houses on an emergency basis only because of a desire to alleviate unemployment," Mr. Bohn point out. "If there is to be long-time program of public activity in replacing slums, legislation must be passed in the states, making it possible for local communities to deal with the problem."

In the last few months, Ohio, Michigan, New Jersey, Maryland and New York have passed such laws. Bills are now pending in South Carolina, Illinois, Massachusetts and West Virginia. This is the first step toward a permanent public housing program.

The National Association of Housing Officials is ready to help in forming sound legislation and to aid local groups in preparing their programs.

Sounder Bonding of City Officials

CITIES are learning how better to bond their officials without making an unnecessary outlay of funds. Bonds covering the office rather than the person holding it have reduced the rates and are less troublesome upon changes in the personnel.

Mayo Fesler, Director, Citizens League of Cleveland, Ohio, makes this point in the February issue of *Public Management*, official journal of the International City Managers' Association. Mr. Fesler recognizes five fundamental features in a sound municipal bonding policy:

1. Official bonds should be paid for out of public funds.

2. Bonded positions should be limited to those in which the officer or employee handles money or valuable property convertible into money.

3. Bonds should be written to cover position rather than person.

4. Purchase of official bonds should be made on competitive bids, annually or biennially.

5. Bonds should be purchased only from surety companies whose reputation is good and whose solvency is assured.

The Municipal Bond Market

A REVIVING market for state and municipal bonds and rising prices for construction materials are indicated in a recent report to Adminstrator Ickes by the Record Section of the Projects Division of PWA.

The Record Section receives, records and distributes applications for allotments to the Engineering, Financial and Legal Divisions of PWA, to be examined by them, and through its hands passes all correspondence from applicants requesting changes in allotments already made. Its report for the first two weeks of February, with respect to 32 applications received for changes in allotments, shows that twenty-five of the applications were requests for changes from allotments of loans and grants to allotments of grants only to 30 per cent of the cost of labor and materials to be used on the projects. The reason given by most of the applicants for requesting this type of change is that they have been or will be able to sell their bonds in the private investment market and will not need to call on PWA to buy them.

The sale of bonds by applicants in the open market enables PWA to give additional stimulus to the heavy industries and create more direct employment on construction jobs by allotting the money thus released to other projects which were left on the waiting list when the $3.300,000,000 public works fund was exhausted.

In making allotments of loans and grants PWA agrees to bid par on bonds bearing 4 per cent interest and to take the bonds at that price, provided private investors do not bid the same price or a higher one. If private investors bid par on the bonds, PWA steps aside in their favor, and if they bid a premium above par they of course take the bonds by right of being the highest bidder.

The following are some recent sales of new issues as reported in the February numbers of *The Bond Buyer*, which says editorially in its issue of February 24:

"The advance in municipal bond market values in recent weeks is undoubtedly stimulating new financing by states and municipalities and a continued increase in the volume of new business is now looked for."

Amount	Borrower and Purpose	Rate (%)	Term (Years)	Basis (%)
$16,809,165	Massachusetts, Municipal Relief Loan	3	3.08 Avg.	2.81
3,000,000	Massachusetts, Water Loan	3.25	1-30 Ser.	3.19
100,000	Odgensburg, N. Y., Welfare	3.60	6.33 Avg.	3.59
300,000	Williamsport, Pa., School	3.75	15.66 Avg.	3.65
9,871,000	Suffolk Co., N. Y., Highway, Hospital	3.90	11.28 Avg.	3.82
100,000	Portland, Me., Improvements	4	1-30 Ser.	3.82
100,000	Hastings, Nebr., Storm Sewer	3.95	5-20 Op.-Avg.	3.95
700,000	Hamden, Conn., High School	4.5	4-8 Ser.	4.49
500,000	Waterbury, Conn., Funding	4.5	13.5 Avg.	4.35
250,000	Duluth, Minn., Refunding	4.5	4-8 Ser.	4.49
5,000,000	Los Angeles, Calif., Water Works	5	1-40 Ser.	4.98
410,000	Summit, N. J., General Improvements	5.25	15.25 Avg.	5.20
385,000	Cleveland Heights, Ohio, Refunding	6	2-11 Ser.	6

Recent City Manager Appointments

Charles Chapman has succeeded W. Henson Davis as City Manager of Borger, Texas.

Joseph A. Fogarty is City Manager of Newburgh, N. Y., succeeding William J. Blake.

F. C. Gowdy is successor to H. M. Renner as City Manager of Elk City, Okla.

Walter E. Lee has been Acting City Manager of Waycross, Ga., since the resignation of L. V. Bean, who is now City Manager of Paducah, Ky.

H. O. Miller has succeeded L. T. Nein as City Manager of Middletown, Ohio.

Carleton F. Sharpe was appointed City Manager of St. Petersburg, Fla., effective February 1. Since January, 1930, Mr. Sharpe has been Executive Assistant to the City Manager of Cincinnati.

Carey S. Sheldon has succeeded F. R. Hogue as City Manager of Ashtabula, Ohio.

C. R. Stickel was appointed City Manager of Melbourne, Fla., on February 1, to succeed E. Robert Helmrich.

H. I. Stites has served as City Manager of Burbank, Calif., since the resignation of W. S. Patterson, on November 28, 1933.

CLARENCE E. RIDLEY,
Executive Director, The International City Managers' Association.

TRAFFIC CONTROL AND FACILITATION

Conducted by Publications Committee, Institute of Traffic Engineers, 173 Fifth Ave., New York

Maxwell Halsey, Chairman, Harry Hemmings, Reyburn Hoffman, Benoit Laberge, Theodore T. McCroskey, Donald M. McNeil, A. J. Naquin, Hawley S. Simpson, Arthur G. Straetz, Peter J. Stupka, Lawrence S. Tuttle, John C. Wrighton

Community Traffic Surveys—Aid Available from CWA

EDITORIAL NOTE.—*Although the partial demobilization of CWA forces now taking place may delay the carrying-out of the program outlined in the following article, municipalities unable to secure Federal funds for community traffic surveys may find such work to be a desirable means of employing with local funds some of their "white collar" citizens who would otherwise be on relief rolls.*

THE following outline of a general plan for community traffic surveys was sent on February 15 to State Administrators of the Federal Civil Works Administration by National Administrator Harry L. Hopkins. On the same date Sidney J. Williams, as Director of Safety, Federal CWA, communicated with the State Directors of Safety, urging their cooperation in bringing this exceptional opportunity to the attention of officials in cities of over 25,000 population throughout the United States. Because of the possibility that CWA funds will be exhausted by May 1, prompt action is obviously desirable in cities which have not already acted in the matter.

GENERAL PLAN FOR COMMUNITY TRAFFIC SURVEYS

Why Make a Survey?—In practically every American city, traffic confusion is causing costly and needless accidents and delays. These decreased during the depression, but with the revival of business the toll of deaths and injuries is again on the increase.

Well-meaning efforts to abate these evils—through providing more signs and signals, through stricter enforcement, or through educational campaigns—are of little avail unless based on an accurate knowledge of the problem. A safety measure successful in one city may fail in another because of different conditions. At this time in particular, every city needs to know exactly what its traffic problem is, because it cannot afford to spend money on police activity, engineering improvement, or educational work unless reasonably sure that accidents and congestion will actually be reduced thereby. The only way to get a complete picture of traffic needs is by digging out the facts according to an organized plan.

Many a city recognizes its need of a traffic survey but has not been able to employ a competent traffic engineer to direct it, nor to provide man-power for making the actual observations and studies.

There is also need for more complete information on traffic conditions and practices all over the country, to help determine what kind of traffic laws, enforcement, engineering, and educational methods are most effective.

Federal CWA Will Help.—The Federal Civil Works Administration, wishing to help toward the solution of these problems, offers the following plan for traffic surveys in cities and, where desired, in counties or in states.

Subjects to Be Covered by the Survey.—A community traffic survey will ordinarily include:

Making traffic counts and preparing a traffic flow map.

Observing how drivers and pedestrians obey traffic signals and signs.

Child pedestrian practices at school corners.

Determining average and extreme speeds at typical locations.

Preparing collision diagrams and analyzing records of accidents and violations where this has not already been done.

Parking studies where needed.

Other similar items, depending on local conditions.

What the Federal CWA Will Provide.—Our Safety Department, with the cooperation of the traffic engineers mentioned below, has prepared complete engineering plans, with forms and instructions for recording and analyzing the observations. A set or a few sets of these will be provided without charge to any city undertaking a survey. We also will assist any city (if desired) to adapt these general plans to its particular conditions and to determine exactly what sort of survey would be desirable and practicable in such city; this assistance will be given through special correspondence and through a limited number of personal visits by one of the trained traffic engineers on our staff. Finally, we will assist the city in analyzing the results and making recommendations for safety measures and other traffic improvements.

What the State and Local CWA Will Provide.—The survey in each city will be a local CWA project. As such it must be approved by the State Civil Works Administrator, according to general regulations and within the regular state allotment of men and money. Local men will make the field observations and will analyze the data in the office. The men thus assigned should have engineering or other technical experience so far as practicable, and a few of them should be trained to take immediate charge of the day-by-day work.

Men employed for supervisory work which involves traveling about the city should ordinarily furnish their men transportation (automobile or street car) and their weekly wage should be set high enough to include such transportation cost; this should be clearly understood by such men at the time of employment or assignment to this work.

Who Should Sponsor and Promote the Survey?—Application for the local project must, of course, be made by a municipal (or county or state) department or official, interested in traffic—ordinarily the Police Department or Engineering Department. Where there is a local organization or committee (safety council, chamber of commerce, motor club, etc.) conducting a community traffic safety campaign, it should cooperate closely with the city in making arrangements for the survey, facilitating its progress, and promoting the adoption of whatever safety measures may be recommended. Where no such community body exists, the Mayor or the official in charge may well appoint a Traffic Survey Advisory Committee representing the interested organizations.

What the Community Should Furnish.—In view of the great local benefit to be obtained, the city and cooperating organizations should assist in every possible way, including the following items which cannot ordinarily be provided by the CWA:

1. Provide necessary office space.
2. Provide mimeographed forms for recording and tabulating the data—to be copied from the model forms which will be furnished by the Federal CWA.
3. Provide a small number of stop watches for making the speed checks—in a city of 100,000 population about 10 such watches should be provided. (If not now available they can be purchased for a nominal sum.)

State, District or County Surveys.—Surveys covering an entire state or portion thereof may be planned along the same general line as described above. Every such case should be taken up especially with the undersigned or with the Associate Director for that region.

How to Proceed.—Every city official, or other person interested in a traffic survey for his community, should take the matter up at once with the undersigned or with the Associate Director for the region as follows:

Northeastern region (New England, New York, New Jersey)—Maxwell Halsey, 1 Park Avenue, New York City.

Southeastern region (Pennsylvania, Middle Atlantic and Southern States)—Burton W. Marsh, Mills Building, Washington, D. C.

Middle West region—Earl J. Reeder, 20 North Wacker Drive, Chicago, Ill.

(The services of these Associate Directors have been loaned by their respective organizations.)

Mountain and Pacific States—Address the undersigned.

In receiving any such request, special advice will be given as promptly as possible regarding the detailed plans for such survey.

At the same time, see your local CWA Administrator or Engineer; obtain printed forms for filing a project application; fill out such application at once and have it forwarded through the local Administrator to the State Administrator.

Immediate action is necessary if a traffic survey project is to be approved and completed under present allotment. If in doubt how to proceed, local parties interested should wire or telephone at once to the Associate Director or to the undersigned.

SIDNEY J. WILLIAMS,
Director of Safety, Federal Civil Works Administration, 1734 New York Avenue, Washington, D. C.

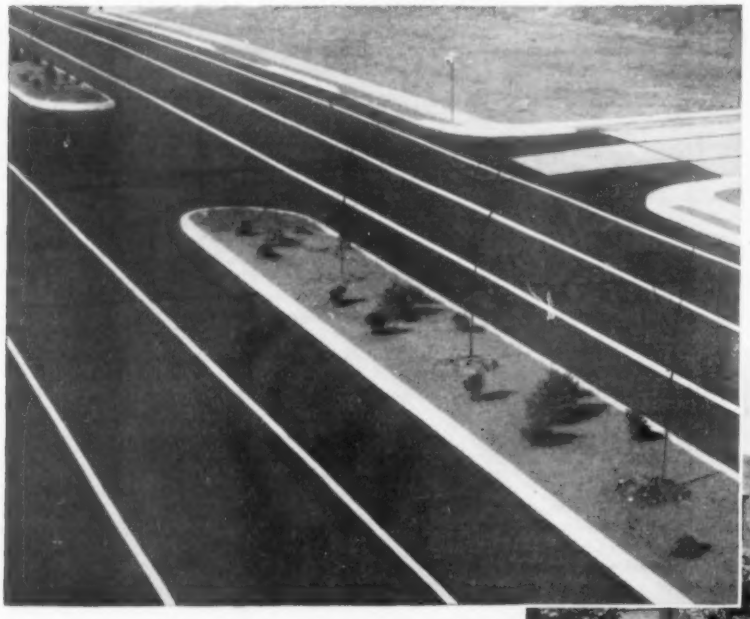
Excessive Speeds a Major Factor in Highway Accidents

FOR the graphic illustrations reproduced on the front cover of this issue THE AMERICAN CITY is indebted to the Travelers' Insurance Company, of Hartford, Conn., in whose booklet, "The Great American Gamble," published last month, these and other striking drawings and photographs appear.

The Travelers' estimate* of the number of persons killed in automobile acci-

* For the National Safety Council's estimate see page 17 of this issue.

ATTRACTIVE



Emphasizes White Curbs and Traffic Lines

SAFE AND ECONOMICAL TOO!

Restful — Stainless — Non Glaring

Dark Color brings warm attractiveness to the sturdy qualities of concrete pavement . . . Dark colored concrete blends harmoniously into landscaped parkways — eliminates stains and discolorations — banishes glare . . . It is permanent and uniform in color, strong and durable, and extremely low in price when produced by—

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dents within the United States in 1933 is 29,900, in addition to about 850,700 injured non-fatally.

The following excerpts from "The Great American Gamble" have special reference to excessive speeds as a major factor in highway accidents:

"Drivers and pedestrians permitted more accidents of greater seriousness to occur last year than in 1932. This is reflected by statistics which show that fatalities increased 5.9 per cent per accident, while the number of persons injured non-fatally increased 2.2 per cent per accident.

"Although a number of factors could be cited as having contributed to the greater seriousness of automobile accidents last year, the one thing which stands out above all others is the increased rate of speed at which many cars were driven. It may be put down as an incontrovertible maxim of automobile accidents that the chance of an injury proving fatal becomes greater as rates of speed of cars involved increase.

"Everything else remaining equal, a drop in the number of automobile accidents should produce a drop in the number of deaths. Since fatalities in 1933 increased 5.9 per cent per accident, the conclusion is inescapable that rates of speed under many conditions of traffic were much too high. Too many drivers use the streets and highways with little or no understanding of the destruction that can be produced by swiftly-moving bodies weighing a ton and a half and upward. . . . . .

"The rate of speed of automobiles has been stepped up considerably in the last six years, and it is safe to assume that this one specific factor has been largely responsible for the 17 per cent increase in deaths since 1927, when registrations were less than 3 per cent under the 1933 number of cars in use. If this assumption is untenable, then it must be concluded that drivers and pedestrians—those who have not been claimed as victims—have not learned one additional iota about the safe use of the streets and highways."

Valuable tables and discussions relating to many other causes of highway accidents are included in this booklet of the Travelers' Insurance Company; for example—hasty, needless and careless actions of drivers; actions of pedestrians; condition of motor vehicles in accidents; types of brakes on cars; road location of automobile accidents; age group and operating experience of drivers; weather, road and light conditions. The 56-page booklet contains 32 full-page illustrations.

Intelligent Planting Increases Highway Safety

EXPERIENCE in Rhode Island has demonstrated that roadside development, including the planting of trees along our highways, adds materially to traffic safety. Along barren stretches the monotony seems to cause a speeding-up of traffic far above the safety limit. The breaking-up of these stretches by the planting of trees, shrubs and other roadside development apparently eases a nervous strain, and it is found that accidents are much less frequent along highways which have been so developed than along the undeveloped portions.

Planting of trees where they might obstruct vision at intersections has never been a part of our policy and could not be advocated by this department. However, the landscaping of intersections with low-growing plants and shrubs has proved definitely effective in the control of traffic and the prevention of accidents, by confining traffic to its proper lane. It has been found in our experience that very few motorists will intentionally drive upon an improved area, other than the paved surface of the highway, and this keeping of traffic upon the area intended for it has been a definite factor in the prevention of traffic accidents.

D. A. SOULE,
Maintenance Engineer, Rhode Island State Board of Public Roads.

Speed Surveys

ACCORDING to Laurence A. Lyon, Captain of the Detroit Department of Police, and Professor A. N. Johnson, Dean of the Engineering College at the University of Maryland, speed surveys now being made in various sections of the country will provide very valuable data from which to arrive at reasonable speed regulations.

In Michigan, the Department of Police, under the direction of Captain Lyon, has completed a survey of speeds which were made on all types of highways and under various weather conditions, from the congested area around Detroit to the lonesome trails of the far north of Michigan. The survey was made by officers on their regular patrols, either on motorcycle or in patrol cars, and the checks were made during daylight hours, darkness, rain, on wet grounds, gravel roads, hard-surfaced roads and concrete roads.

No passenger cars or high-speed vehicles were picked out, but the first ten vehicles were paced on the various types of roads each day for two weeks. In every instance the check was made without the driver of the vehicle having any knowledge of it.

The following tables show the various speeds at which the cars were driven:

25 mph and under	5%
30 mph	9%
35 mph	12%
40 mph	20%
45 mph	17.9%
50 mph	16.6%
55 mph	8%
60 mph and over	9.6%

Average Speed on Paved Highways

During daylight hours	43.3 mph
During darkness	41.5 mph

Average Speed on Gravel Highways

During daylight hours	39.8 mph
During darkness	34 mph

The average speed of all vehicles checked on all types of highways under all weather conditions is 43.7 mph. The results of this survey seem to indicate that 45 mph is a good average speed and that a regulation declaring speeds in excess of that figure to be prima facie evidence of unreasonable speed would be in order.

In the survey being conducted by Prof. A. N. Johnson, around the area of Maryland and Washington, D. C., data collected on the basis of zones will be examined. Another combination of the data will be for individual roads on a few of which five or six counts have already been taken. Still another assembly will be by neighborhoods; that is, in the vicinity of Washington, Baltimore, Frederick Valley, etc.

There will also be a tabular statement to include the percentage of the total amount of traffic that is within given speed limits, as 15-20 miles, 20-25 miles and so forth.

MAXWELL HALSEY.

To Determine a Standard Building Code

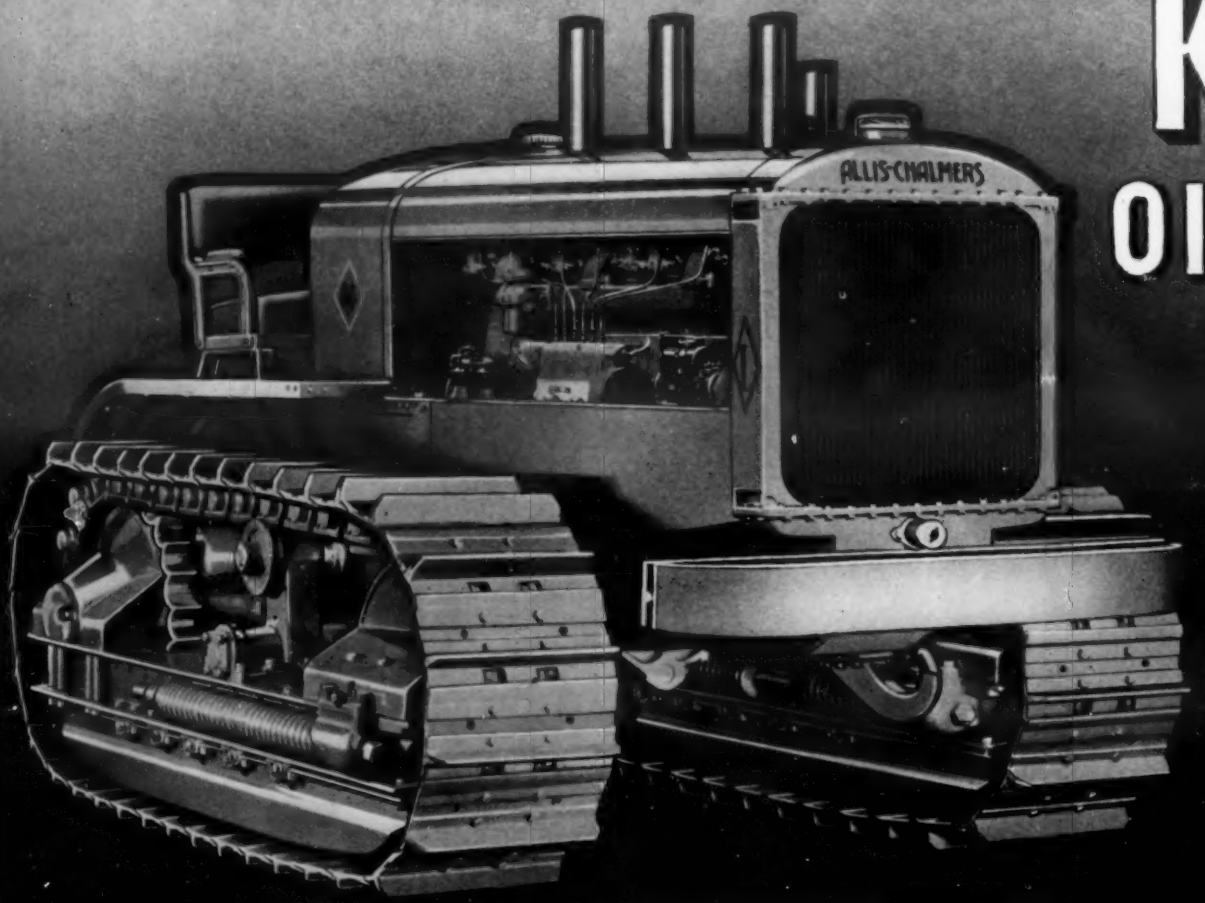
THE New York State Department of Labor, in collaboration with the Conference of Mayors and other Municipal Officials of the State of New York, and the College of Engineering of New York University, is beginning a technical study of all building codes of the state for the purpose of unification and standardization and an ultimate recommendation to the Legislature for the adoption of a state standard building code.

The project, as described in a statement issued on February 13 by William L. Picard, Deputy Commissioner of Labor of the State of New York, will be developed by engineers, architects and statisticians under the CWA with offices in the School of Architecture of New York University. Technical guidance for the project will be provided by five members of the New York University faculty, Dean Collins P. Bliss of the College of Engineering, Dean E. Raymond Bossange of the Department of Architecture, Professor Thorndike Saville, Professor Carl T. Schwarze, and Professor Walter S. Cleverdon, all outstanding in engineering and architectural circles. Frederick Pavlicek, Jr., will be in immediate charge of the project. Space for the project has been provided by Dean Bossange at the University's Department of Architecture, 250 East Forty-third Street.

The first part of the project will include an analytical review of the building codes of all of the principal cities in the state for the purpose of unification and standardization. Ultimately a state standard building code will be recommended to the New York State Legislature. The Department of Commerce, the National Housing Association and other authorities will be consulted in preparing the model standing building code.

Sponsors of the project believe that a standard code would have a material effect in reducing the cost of construction as well as encouraging new construction, and that the project has a marked economic value in strict accord with the National Recovery Act.

ANNOUNCING the New models "KO" AND "LO" OIL TRACTORS



THE "LO" OIL TRACTOR

THE New Allis-Chalmers Oil Tractors are equipped with a new type of oil engine which operates on Diesel fuel. These engines introduce an entirely new principle in tractor engine design.

We use a Bosch Diesel fuel pump to inject the cold charge with cold air and ignite it with a spark. We do not depend on compression for ignition, but use the time-tried magneto.

The low pressures and orderly burning of the fuel in the A-C oil engines assure a smooth running engine with unexcelled lugging ability and ample power. Fuel consumption is low at all loads.

Two models are now available—the model "KO", developing 48 drawbar horsepower and weighing approximately 11,200 pounds—and the model "LO", developing 76 drawbar horsepower and weighing approximately 23,000 pounds.

Write for further information.

POWER CONTROLLED GRADERS
HAND CONTROLLED GRADERS
SPEED PATROL GRADERS
TRACK-TYPE TRACTORS
ELEVATING GRADERS

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TRACTOR DIVISION—MILWAUKEE, U. S. A.

POWER UNITS .... MODELS 40. 50. 60. 90. H. P.
WHEEL TYPE TRACTORS
TRACK TYPE WAGONS
WAGON TRACKS

Prepared by
FRANK B. WILLIAMS
Author of "The Law of City Planning and Zoning"

ZONING and PLANNING NOTES

From Data collected by the Zoning Committee of New York (233 Broadway)

Zoning—Presumption of Validity —Residential District— Recreation

DISTRICT OF COLUMBIA.—*Golf, Inc. v. District of Columbia*, 67 Fed. 2d. 575 (Court of Appeals, November 6, 1933).—The presumption is that a zoning ordinance is reasonable, and it will be so assumed in the absence of evidence to the contrary.

Regulations that permit the use of lands in residential zones for public recreational purposes and deny a similar use to private individuals are not discriminatory; for the public use is for the benefit of all the people of the district, and is not, therefore, comparable to a private use.

Nuisance — Zoning Ordinance as Defense

MASSACHUSETTS.—*Tortorella v. H. Traiser and Co.*, 188 N. E. 254 (Supreme Court, December 4, 1933).—In the conditions of present living, noise seems inseparable from the conduct of many necessary occupations. Its presence is a nuisance in the popular sense in which that word is used, but in the absence of statute noise becomes actionable only when it passes the limits of reasonable adjustment to the conditions of the locality, and of the needs of the maker to the needs of the listener. What these limits are cannot be fixed by any definite measure of quantity or quality. They depend upon the circumstances of the particular case. They may be affected, but are not controlled, by zoning ordinances. (*Beane v. H. J. Porter, Inc.*, 280 Mass. 538; *Marshall v. Holbrook*, 276 Mass. 341; *Strachan v. Beacon Oil Co.*, 251 Mass. 479.) The test is whether rights of property, of health or of comfort are so injuriously affected by the noise in question that the sufferer is subjected to a loss which goes beyond the reasonable limit imposed upon him by the conditions of living, or of holding property, in a particular locality in fact devoted to uses which involve the emission of noise although ordinary care is taken to confine it within reasonable bounds; or in the vicinity of property of another owner who through creating a noise is acting with reasonable regard to the rights of those affected by it.

EDITOR'S NOTE.—The Judge in this case cites with approval the Massachusetts cases of *Marshall v. Holbrook*, summarized in our December, 1931, issue, and *Beane v. H. K. Porter, Inc.*, digested in our January, 1933, number. The law on the subject may be said to be that the zoning ordinance allowing certain uses in a given locality, at least tends to show what the character of that locality is.

Prohibition of Use

OHIO.—*Simon v. City of Cleveland Heights*, 188 N. E. 308 (Court of Appeals, Cuyahoga County, October 23, 1933).—Cleveland Heights is a city of about 50,000 people. An ordinance of that city forbade the slaughter for sale of any goat, chicken, duck, goose or other fowl anywhere within the city. Simon was engaged in that business. The business as conducted is not a nuisance. The Court held that this occupation could be regulated but could not be prohibited.

EDITOR'S NOTE.—Zoning absolutely prohibits certain uses in certain localities. This may be said to be regulation. But the prohibition in any part of it of a use necessary in a given community is in effect dumping it upon neighboring communities, and would seem to be unreasonable.

Zoning Density of One Family Per Acre—Is It Reasonable and Valid?

The report of the Department of Public Welfare of Massachusetts for the year ending November 30, 1933, published last month, calls attention, with approval, to the zoning ordinance of Carlisle limiting lot sizes to a minimum of one acre. There are many localities in which such a development is most desirable, and in many cases by private restrictions an area of this extent has been established and is undoubtedly legal. The question is whether it can be done by public regulation, and this depends upon whether it is reasonable to do it in this way.

Zoning ordinances establishing this amount of open space and more have been enacted within the last few years. The town of Harrison, N. Y., passed an ordinance July 18, 1928, acquiring in a Residence A—2 district at least one acre per family, and in an A—3 district five acres per family. The town of Dover, Mass., fixes a minimum of one acre in its A Residence district, and the town of Darien, Conn., is thinking of doing the same in its AA Residence zone.

So far as your editor knows, there has been as yet no legal decision with regard to such an ordinance, and a municipality wishing to require such an amount of open space must be guided by general principles in deciding whether it can legally be done.

Without doubt, we in this country are being educated to the need of open space around our dwellings. The requirement of ample-sized building lots is very common in private developments, where it can be secured by private agreement, and it is natural that those parts of existing communities which cannot well obtain these results in this way should attempt to get them under the police power. Very generally zoning standards in this respect are advancing, as is revealed by a study of recent ordinances. Without doubt the courts would support a more stringent requirement than they would have done years ago. Would they uphold the requirement of an acre? Only, of course, in a community where existing development made it appropriate. And in such communities it would be the exceptional case in which the question would come before the courts. In a small town, where fire-fighting facilities are more limited, and ample space, in accordance with prevailing custom in that locality, increases land values, it might well be possible to make out a case for zoning that establishes such requirements.

Needed: A New Name for City Planning

To the Editor of THE AMERICAN CITY:

City, town, community, regional, state, and national planning have developed, from exclusive concern with physical operations, into a larger, fuller, and more serviceable field of civic functioning.

At the beginning, interest was centered in the physical, because of its landscaping and architectural introduction to public attention. Planning has rapidly developed in scope and vision, and in the last several years greater emphasis has been given to the moral, sociological, sanitary and hygienic phases of public living. In other words, planning has stressed its interest in the general welfare of the people served—an interest which is wholly consistent with the "health, safety, morals, and general welfare" requirement, so essential to planning's legality. The physical will always be a very important function of planning, but it should not be the all-important.

Civic planning adds life, greater scope, and increased vision to city planning. "City planning," moreover, does not adapt itself in name to community, regional, state, or national areas. National or state city planning sounds inconsistent and does not express the real objective. Civic planning does properly adjust itself to the broader fields in area and service and is expressive of the intent and purpose.

If *city* planning has developed into *civic* planning, why not call it by that name?

H. S. RUSSELL,
Consultant to Detroit City Plan Commission.

EDITORIAL NOTE.—THE AMERICAN CITY would welcome comments from its readers as to the foregoing suggestions, and as to a possible new name broad enough to embrace the various areas of physical planning mentioned in the first paragraph. As a name to cover such planning and also the field of civic functioning which Mr. Russell wishes to include under a new name, *civic planning* may be the best available term. But we believe that the greater need is for a name more restricted in scope, but applicable to city, regional or state planning as those terms are generally understood by the membership of the American City Planning Institute. *Land planning* is suggested as such a term. Has any reader a better name to propose?

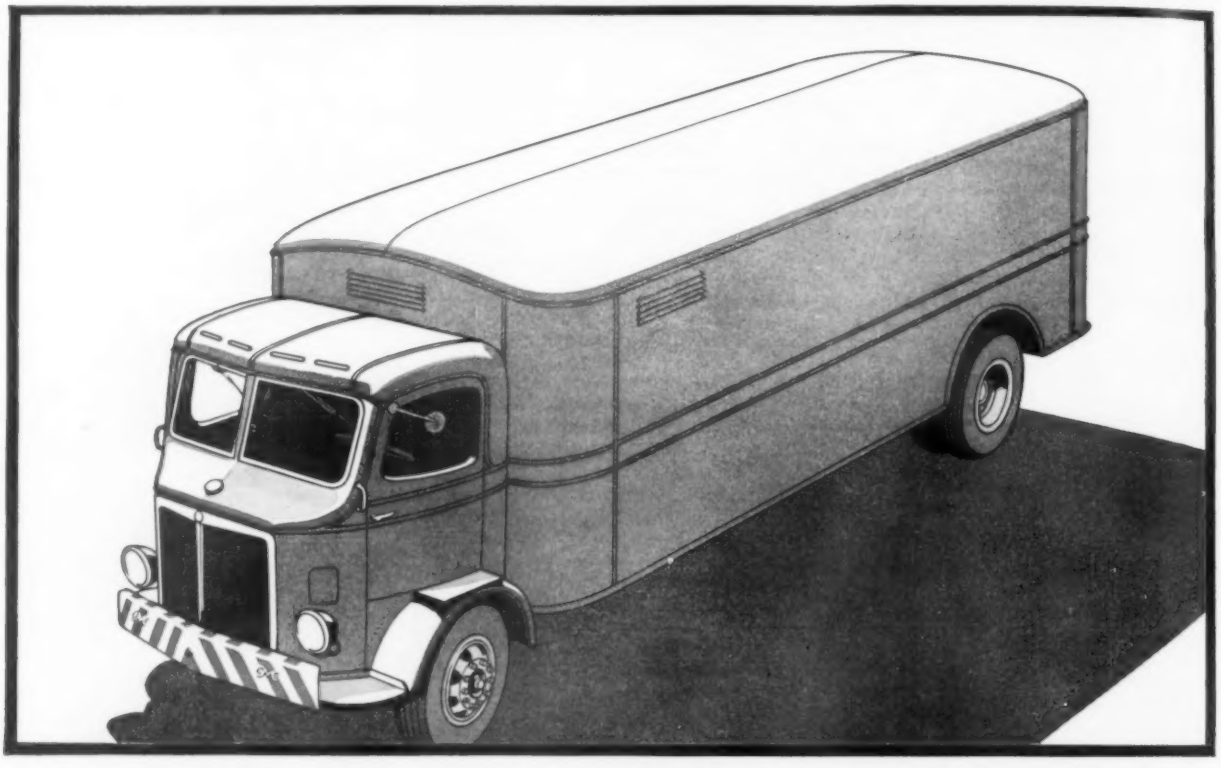
ANNOUNCING THREE NEW

GMC CAB-OVER-ENGINE TRUCKS

T-73 — 15,000 lbs. gross rating

T-75 — 24,000 lbs. gross rating

T-78 — 30,000 lbs. gross rating



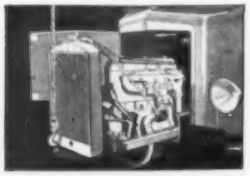
IDEAL WEIGHT DISTRIBUTION ★ ★ MORE PAYLOAD ★ ★ SHORTER TRAIN LENGTH

In these three new cab-over-engine models, the General Motors Truck Company accomplishes a radical improvement in load distribution. In addition, GMC cab-over-engine design also provides increased payload capacity for a given wheelbase.

As developed by GMC, this design meets every demand for power plant accessibility and easy maintenance, and for utmost driver comfort.

Each of the new models is powered by a GMC truck-built, 6-cylinder, valve-in-head engine. Each maintains the GMC standard of *highest sustained torque per cu. in. of displacement.*

For complete details and prices, see the nearest GMC representative or write to the factory direct.



For major service, the entire engine rolls forward; it can be completely removed.

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The cab is extra roomy and comfortable, with complete and modern ventilation.

Showing the clear vision and modern design, the grille giving access to the engine.

GENERAL MOTORS TRUCKS and Trailers

GENERAL MOTORS TRUCK COMPANY — *Time Payments Available Through Our Own Y. M. A. C.* — PONTIAC, MICHIGAN

THE CITY'S LEGAL RIGHTS AND DUTIES

Conducted by A. L. H. STREET, Attorney at Law

Accidents

City held not liable for drowning of bather in public swimming pool (California District Court of Appeal: *Crone v. City of El Cajon*, 24 Pac. 2d, 846).

Hydrant located in driveway leading across parkway to filling station may be so located as to constitute nuisance, making city liable for injury to motorist colliding with it (Texas Court of Civil Appeals: *Kling v. City of Austin*, 62 S. W. 2d, 689).

Banking

Statute giving priority of right to municipalities as depositors in insolvent banks over other depositors held unconstitutional (Maryland Court of Appeals: *Ghinger v. Pearson*, 168 Atl. 105).

Bonds

Invalidity of annexation proceedings held no defense to city against payment of special improvement bonds reciting regularity of proceedings (Florida Supreme Court: *Crawford v. State*, 149 So. 340).

Civil Service

Notice that successor had been appointed held not a valid notice of removal (New Jersey Supreme Court: *Sinnamon v. City of Wildwood*, 167 Atl. 760).

Contracts

Contractor may be required by city to give bond to pay materialmen for materials used in constructing public improvements (Pennsylvania Supreme Court: *City of Philadelphia v. Jafolla*, 167 Atl. 569). But a city neglecting to require a statutory bond of a contractor, to protect laborers and materialmen, is not liable to the latter; mandamus to require a bond being the proper legal remedy (Pennsylvania Supreme Court: *Szilagyi v. City of Bethlehem*, 167 Atl. 782).

Licenses

City held empowered to impose license charge of $5.50 per day for each fireman and policeman needed at baseball parks, etc. (Pennsylvania Supreme Court: *American Baseball Club v. City of Philadelphia*, 167 Atl. 891).

City's attempt to impose license tax on bus terminals held void as conflicting with state regulation (Georgia Supreme Court: *Southeastern Greyhound Lines v. City of Atlanta*, 170 S. E. 43).

City held powerless, under statutes, to impose tax on common carrier vehicles operating into city (Georgia Supreme Court: *Mayor and Aldermen of Savannah v. V. C. Ellington Co.*, 170 S. E. 38).

Statute and ordinance for licensing of "business" held limited to establishments having a local situs and not to include operation of delivery vehicles by non-resident (New Jersey Supreme Court: *Lynch v. City of Long Branch*, 167 Atl. 664).

City may exact higher license tax for selling alcoholic beverages than non-alcoholic (Kentucky Court of Appeals: *Commonwealth v. Rigo*, 61 S. W. 2d, 900).

Ordinance taxing linen supply operators $200 annually upheld, although steam laundries were taxed only $60 and hand laundries only $35 (Georgia Supreme Court: *National Linen Service Corporation v. City of Albany*, 169 S. E. 894).

Statute revoking power of city to tax disabled or needy ex-soldiers upheld (Oklahoma Supreme Court: *Farley v. Watt*, 23 Pac. 2d, 687).

Fifth class city's annual tax of $100 on cigarette sales upheld (Kentucky Court of Appeals: *Commonwealth v. McCray*, 61 S. W. 2d, 1043).

Non-resident laundry held not subject to local license requirements because collecting garments (New Jersey Supreme Court: *Haviland v. Evan*, 168 Atl. 171).

Ordinances

Ordinance passed at adjourned session of regular meeting complied with statutory requirement for passage at a "regular meeting" (Kentucky Court of Appeals: *Town of Hodgenville v. Kentucky Utilities Co.*, 61 S. W. 2d, 1047).

Recalling Officials

City clerk's failure to check recall petition within time allowed by law held to raise a presumption of validity of signatures, requiring certification to proper authority for election proclamation (Oklahoma Supreme Court: *State v. Pulliam*, 25 Pac. 2d, 64).

Referenda

Taxpayers held entitled to enjoin unauthorized referendum on Sunday movies (New York Supreme Court, Otsego County: *Hathaway v. City of Oneonta*, 266 N. Y. Supp. 237).

Sewers

City held not liable for overflow of sewers existing before territory was incorporated into city (Kentucky Court of Appeals: *Anderson v. City of Ludlow*, 62 S. W. 2d, 785).

Sewer system may be constructed in sections, with levy of assessments as each section is completed (Kansas Supreme Court: *Alber v. Kansas City*, 25 Pac. 2d, 364). Or assessments may be deferred until the whole system is completed (New Jersey Supreme Court: *Vanderbilt v. Town of Belleville*, 168 Atl. 181).

Sidewalks

City held not liable to abutter for diminishing width of sidewalk from eight to two feet as incident to street improvement (North Carolina Supreme Court: *Ham v. City of Durham*, 170 S. E. 137).

Street Lighting

Ornamental street lighting held a street improvement payable through special assessments, and not a part of the city's electric utility chargeable against the entire city (California District Court of Appeal: *Logan v. City of Glendale*, 22 Pac. 2d, 552).

Streets

Paving bond recital that assessments would pay principal and interest held not to make city liable to bondholders on delinquency in payment of assessments (United States Circuit Court of Appeals, Eighth Circuit: *City of Winner v. Kelley*, 65 Fed. 2d, 955).

City held not entitled to open street across railroad station grounds without consent of railroad (Kentucky Court of Appeals: *City of Grayson v. Eastern Kentucky Southern Railway Co.*, 62 S. W. 2d, 1034).

Private alley held assessable for improvement of connecting street (Pennsylvania Court of Common Pleas, Lancaster County: *Borough of Elizabethtown v. Barnhart*, 25 Pa. Munic. Law Rep. 56).

Taxation

Statute providing for apportionment of undistributed tax revenues upheld (Ohio Supreme Court: *City of Cleveland v. Zangerle*, 186 N. E. 805).

Statute purporting to exempt water and sewer bonds from taxation in hands of individuals, etc., held unconstitutional (Arkansas Supreme Court: *Jernigan v. Harris*, 62 S. W. 2d, 5).

Fair apportionment of taxes, not accuracy in valuing property, determines the validity of assessments (Virginia Supreme Court of Appeals: *City of Roanoke v. Williams*, 170 S. E. 726.) See, also, *City of Norfolk v. Snyder*, 170 S. E. 721, and *City of Roanoke*, 170 S. E. 723, decided by same court.

Workmen's Compensation

Beneficiaries of emergency relief injured while working for city without pay held not covered by Workmen's Compensation (Michigan Supreme Court: *Vavida v. City of Grand Rapids*, 249 N. W. 826).

City plumbing inspector held not covered by Oklahoma Compensation Act (Oklahoma Supreme Court: *City of Tulsa v. Hunt*, 23 Pac. 2d, 640). Nor does same act cover policemen (same court: *City of Duncan v. Ray*, 23 Pac. 2d, 694).

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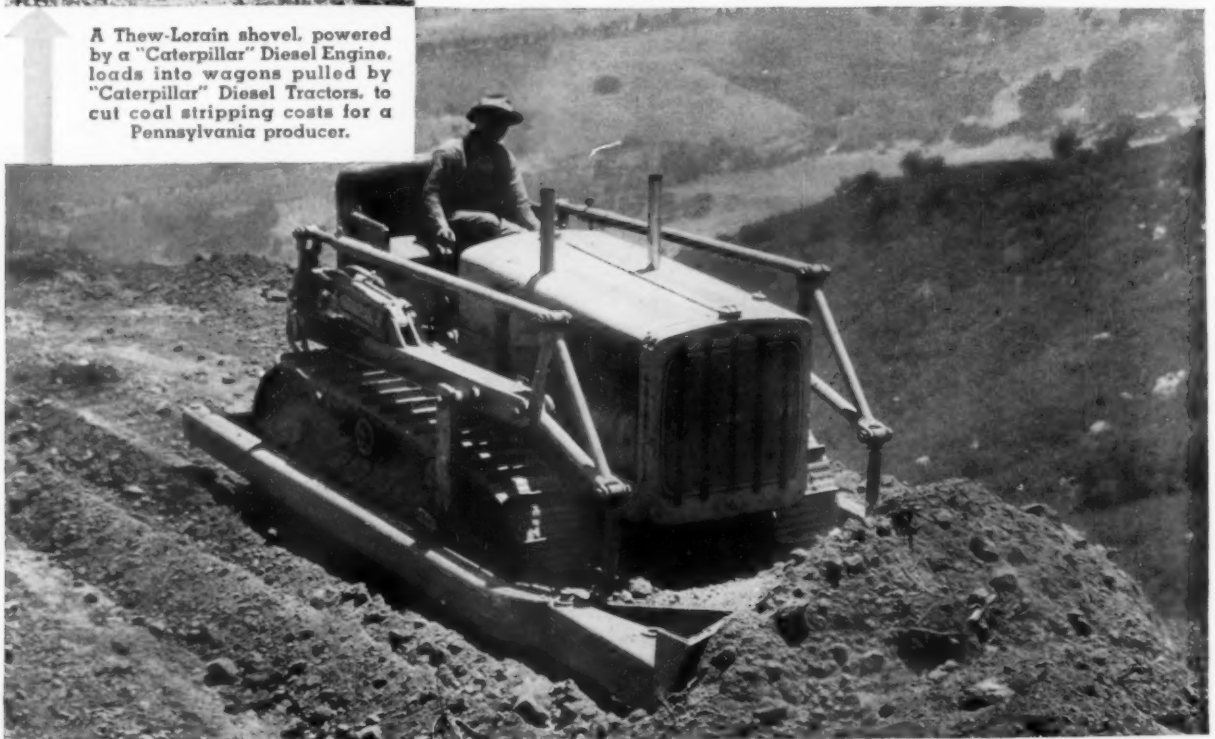
AMERICA GOES DIESEL

A Thew-Lorain shovel, powered by a "Caterpillar" Diesel Engine, loads into wagons pulled by "Caterpillar" Diesel Tractors, to cut coal stripping costs for a Pennsylvania producer.



"Casting-in" with a "Caterpillar" Elevating Grader on road work, this "Caterpillar" Diesel Seventy-Five Tractor moves 4000 yards per day at a fuel cost of $2.48.

Pushing a "trailbuilder" blade, this "Caterpillar" Diesel Tractor makes a new mountain road at a fuel-cost about one-quarter that of a gasoline tractor.

MUNICIPAL AND CIVIC PUBLICATIONS

Prices quoted do not include postage, unless so stated

Water Works

The American Water Works Association announces that there has been prepared, under one cover, a complete index to cover 53 years of the Proceedings, the *Journal* and other publications of the Association from the earliest issue (1881) through 1933. Such a complete and comprehensive index was badly needed and will make for ready finding of articles published by the Association during its life, classified according to subject matter, and authorship. It is also cross-indexed and thereby makes readily available reference to the voluminous but scattered information contained in the Association publications.

This index has been compiled under the direction of A. V. Ruggles, Assistant Secretary of the Association. It contains 200 pages and is bound in stiff buckram covers. It has been printed in a limited edition for sale to members at $1.50—a price less than actual cost of production. To non-members the price is $3.50 per copy. Orders are now being taken at the Association office at 29 W. 39th St., New York, for filling on or about April 1. A sufficient number of copies will be reserved for supplying foreign members.

Pensions

The Citizens Budget Commission tells "The Story of Pensions in New York City" in a pamphlet published in January, 1934, starting out with "Ten Facts to Remember" regarding sound and unsound pension funds as now operated, and then presenting the history and operation of the individual funds—police, firemen, street cleaning, Health Department, Court and Grady, Board of Education, and the teachers' retirement, and city employees' systems; finally submitting an outline of the Commission's own program for solving the problem—the consolidation of all the city's pension funds into the two actuarily sound funds—teachers' retirement and city employees' retirement, and the removal by legislation of the over-generous benefits secured for groups of employees for their own benefit at the city's expense. 24 pp. Chart, drawing. (Apply to the Commission, 350 Madison Ave., New York.)

Specification for Materials

Tentative specifications have been issued (January 30, 1934) by the American Society for Testing Materials on the following materials: ready mixed concrete; structural clay floor tile; structural clay non-load-bearing tile; structural clay load-bearing wall tile; mild steel plates; steel for buildings; steel for bridges; concrete for pavements; clay sewer pipe; load-bearing concrete masonry units. The Society desires to give every one interested in any standard an opportunity to participate in its establishment. Separate copies, 25c each. (Apply to the Society, 260 S. Broad St., Philadelphia, Pa.)

Planning

In *The Architectural Record* for February, 1934, there is an effectively illustrated and thorough study of "Store Buildings and Neighborhood Shopping Centers," by Clarence S. Stein and Catherine Bauer. It considers: the number and kinds of stores required; their location; their form; and their operation to secure long-time success. The consumer, the landlord, the storekeeper, the community, the city, must all be satisfied by the healthy shopping center. Scientific store planning must be based on analysis and forecast of the purchasing power of the community, modified by income, general character, buying habits, location in relation to larger centers, etc. The northern section of Radburn, N. J., ultimate population, 10,000, is chosen for a demonstration problem in the matter of number and kind of stores. The elements of pedestrian and automobile approach, of parking, and of delivery are carefully considered. It is maintained that "the best method of serving all the interests permanently is the community ownership of land and buildings for stores from the beginning." 14 pp. 50c. (Apply to the magazine, 119 W. 40th St., New York.)

Taxation

Under the title of "Pay Your Taxes," the National Municipal League has issued a manual of suggestions, ideas and methods for reducing tax delinquency, as part of the information service maintained by the League in connection with the National Pay Your Taxes Campaign. January, 1934. 11 mimeographed pp. Under the main heads, The Problem, The Immediate Job, and The Longer Range Job, the situation is analyzed; the widespread effects of tax delinquency are shown; definite, practical methods are described for surveying local conditions, for publicity and education, for personal interviews with delinquents, and for actually securing payments; also for prevention of the same financial difficulties in the future, by elimination of waste in government; and by improvement in methods of assessment and collection, and in tax laws. (Apply to the League, 309 E. 34th St., New York.)

The Public Administration Service has issued as Publication No. 36 a study of "Property Tax Limitation Laws: The Evidence and the Arguments for and against them by Twenty-four Authorities," edited by Glen Leet, of the American Municipal Association, and Robert M. Paige, of the Governmental Research Association. The contributors are familiar and distinguished names in the field of public finance and taxation. This symposium presents different points of view and different judgments as to the efficacy and desirability of tax limitation laws, but the preponderance of opinion is unfavorable to both constitutional and statutory limits. 96 quarto pp. 75c. (Apply to Public Administration Service, 850 E. 58th St., Chicago, Ill.)

The Bureau of Business Research of the University of Kentucky, Lexington, Ky., has issued the following pamphlets: "Motor Registration Tax Diversion," by Robert B. Stewart, supervised by James W. Martin, Director of the Bureau, 9 pp.; "An Immediate Tax Program for the State of Kentucky," by James W. Martin, 28 pp., Bulletin No. 3 of the Bureau, January, 1934; "The Corporation License Tax in Kentucky," by David McKinney, Assistant in the Bureau, 25 pp., Bulletin No. 4 of the Bureau, January, 1934; and a 16-page quarto reprint from *The Tax Magazine* for December, 1933, and January, 1934, entitled "Recent State Gross Sales Tax Legislation," by James W. Martin, and William A. Tolman, Extension Instructor in Economics, University of Kentucky. (Apply to the University.)

Municipal Finance

Three pocket-size pamphlets, published January, 1934, by the Chamber of Commerce of the United States, Washington, D. C., as reports of the Committee on State and Local Taxation and Expenditures: "Property Tax Collection," 9 pp.; "Economy in State and Local Government," 10 pp.; "Emergency Municipal Debt and Credit Problems," 16 pp. (Apply to the Chamber.)

Fire Prevention

The Sixth Annual Northwest Fire School was held at the University of Minnesota and the Minneapolis Fire Department Drill School September 18-22, 1933. Its Proceedings have been published by the League of Minnesota Municipalities in a well-prepared illustrated pamphlet of 47 pages. The papers, presented by authorities in the various divisions of the field, are: Controversial Subjects; The Crime of Arson; Ventilation of Fires; Inspection for Fire Hazards; Inflammable Liquids: Retail and Consumer Hazards; Industrial Hazards; Fire Alarms in Smaller Communities; Forestry Fires—Peat Fires—Special Equipment; The Statutory Law of Outside Fire Fighting. Forms for inspection of buildings and of fire apparatus, as used by the Minneapolis Fire Prevention Bureau, are included. (Apply to the League, University of Minnesota, Minneapolis, Minn.)

Industrial Stabilization

Permanent Prosperity.—By John Bauer and Nathaniel Gold. Harper & Brothers, New York. 247 pp. $2.75 from THE AMERICAN CITY.

Here are four quotations which suggest the thesis of this important contribution to forward-looking economic thought:

"To the extent that individuals cannot be absorbed in private industry they should be provided with useful work through a comprehensive plan of public activities. This should be based upon a nation-wide survey of needed public developments, which would bring into coordination Federal, state and local improvements. It should be sufficiently elastic so that it could be readily expanded and contracted according to the need of jobs."

"We feel that it will probably be necessary to nationalize all banking, or at least to unify its organization and control for public purposes. This is the only field in which we conceive the necessity of substantial change from present capitalistic organization."

"The government can finance its expenditures through new money issues up to the limits of maintaining stable prices. . . . It can avoid the burdens, restrictions, complications and distortions produced by borrowing. These handicaps work reciprocally upon both government and private enterprise. There is no good reason for fixed charges upon public improvements."

"If the country really desires industrial stabilization, it must discard the prevalent notion that public activities are carried on at the ultimate expense of private business and the taxpayer. This is fundamentally a misconception that obstructs stabilization. It is as untrue as would be the contention that a shoe factory is operated at the expense of taxpayers. When any activity is needed and is properly financed, it is not a burden to taxpayers and business at large."

Grade Crossing Elimination

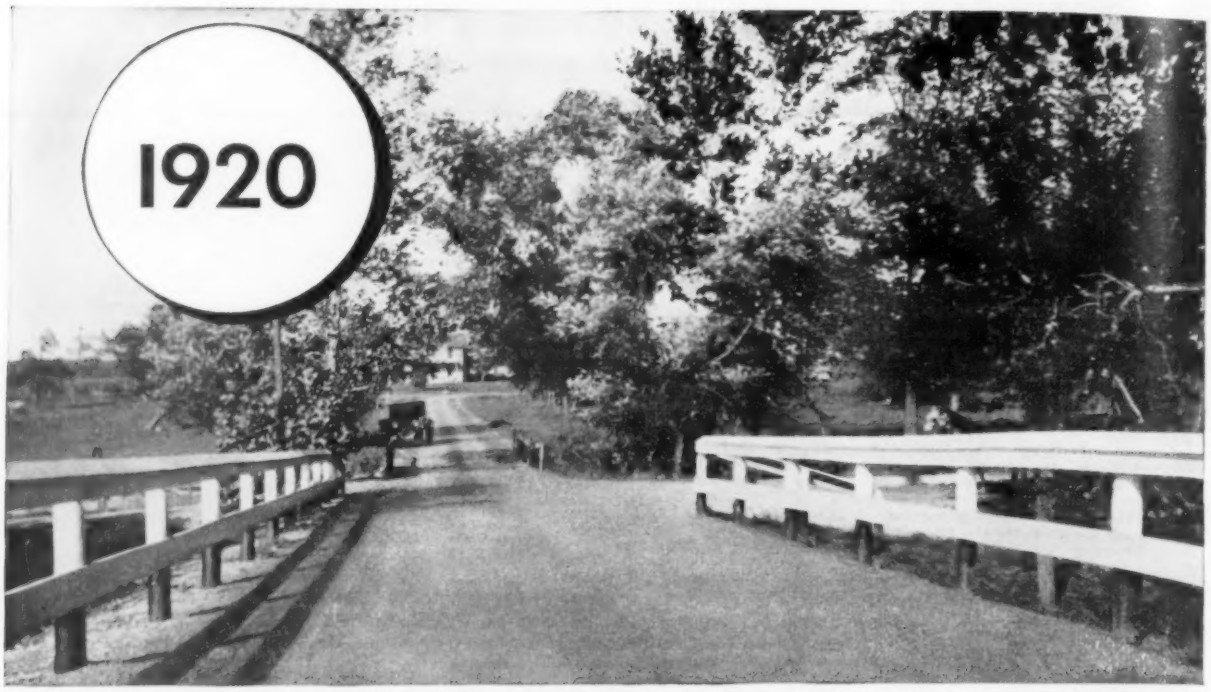
In January the American Institute of Steel Construction issued a 'Special Report on Highway Crossings" showing the economic importance and the great need of the elimination of grade crossings and the separation of traffic at congested highway points, in order that transportation costs and time may be lessened and lives and health preserved. In 1932 a total of 1,525 persons were killed and 3,989 injured in grade crossing accidents in the United States. Reports from 32 states and the District of Columbia as to plans for grade crossing elimination and highway improvement during 1934 are given. 8 pp. (Apply to the Institute, 200 Madison Ave., New York.)

Township Government

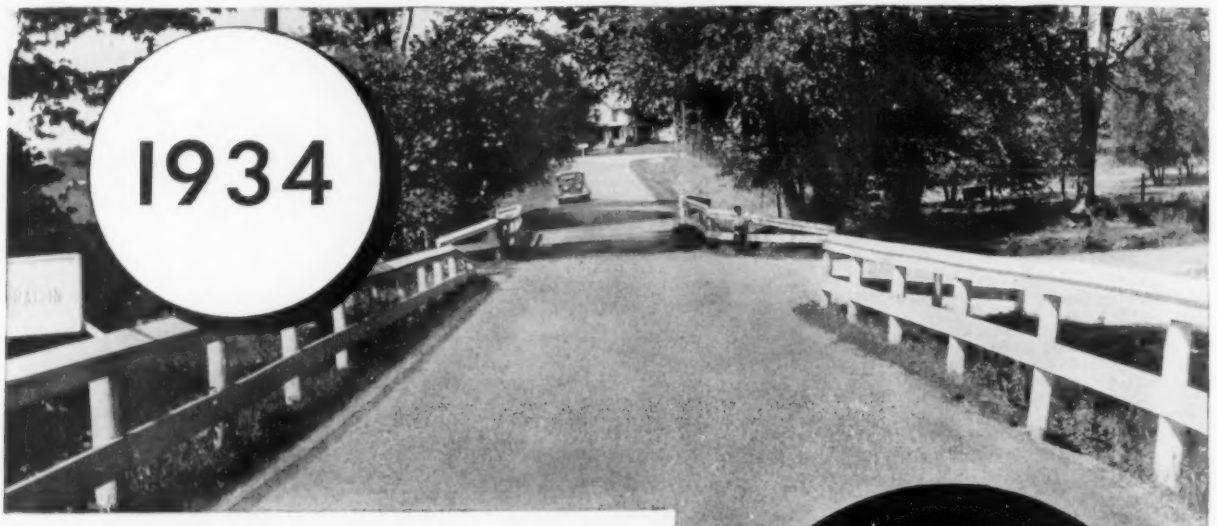
The Cincinnati Bureau of Governmental Research has prepared for the Committee on Coordination and Cooperation in Hamilton County, Ohio, a report on "Township Government in the State of Ohio, With Particular Reference to Hamilton County." This is Report No. 54, and was made public in December, 1933. Townships in Ohio now have only two major functions: (1) construction and maintenance of township roads, for which the county has been found to be technically and financially better equipped; and (2) preservation of health and hospitalization of indigents. The administration of unemployment and poor relief has been shown to be a natural function of the county. The townships in Hamilton County no longer are essential in local government, and it is recommended that their abolishment should be considered in the framing of a county charter as a means of simplifying governmental structure and promoting efficiency and economy. 51 mimeographed pp. (Apply to the Bureau, 619 Gwynne Bldg., Cincinnati, Ohio.)

Pavements

An attractive illustrated 20-page pamphlet entitled "Pavements Resurfaced with Concrete" has been issued by the Portland Cement Association covering concrete resurfacing projects in different parts of the country, with construction details to meet varying conditions. (Apply to the Association, 33 W. Grand Ave., Chicago, Ill.)



Ida-Maybee Road, Monroe County, Michigan. Water-bound macadam maintained with Tarvia since 1920. The Eighteenth Amendment went into effect that year. Upper photo was taken in 1920; lower photo shows condition of road today, proof that initial investment and maintenance need not be great to produce an efficient, long-lived road.



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Libraries

Our Starving Libraries: Studies in Ten American Communities During the Depression Years. —By R. L. Duffus. Houghton Mifflin Company, Boston. 1933. 152 *pp.* $1.25 *from* THE AMERICAN CITY.

The ten big-city libraries studied are those in Detroit, Chicago, Indianapolis, Louisville, Knoxville, Richmond, Baltimore, Brooklyn, New York, Springfield, Mass. Each has its own chapter, in which is presented the way in which the library has met the ironical situation of slashed library budgets and a greater demand for books than at any other time in our history. The information given is detailed as to enforced economies and their results, and as to the spirit and atmosphere maintained by librarians in doing their best to sustain the interest and morale of those who have come to them for help to live. The author believes that those who hold readers' cards in lending-libraries might organize as local committees and secure hearings on library budget-making and other library policies when up for decision, and thus prevent a repetition of the treatment which most American libraries have received during the last few years.

Local Government

Recommendations for the gradual elimination of the township as a unit for the administration of local services are made in Report No. 3 of the Committee on County Government of the National Municipal League, prepared by the Chairman of a sub-committee, Prof. Arthur W. Bromage of the University of Michigan. The Chairman of the general committee is John A. Fairlie of the University of Illinois. The territory considered includes the Middle Atlantic States and the Middle West. The objections to the township are carefully considered; then the objections to township elimination are dealt with, and, finally, the Committee's recommendations are formulated. 12 pp. Printed as the Supplement to the February, 1934, issue of the *National Municipal Review*. (Apply to the League, 309 E. 34th St., New York.)

Housing

"A Digest of Recent Legislation Providing for State Regulation of Housing Activities" is given in an 8-page mimeographed pamphlet issued by the Halsted Street Philosophical Society (1414 E. 59th St., Chicago, Ill.) under the general heading of "Form and Organization: Studies of the New Techniques & Environments." The Society is concerned with architecture and housing, city and regional planning, social organization, government and public administration. The Digest is an abstract of a paper by Joseph G. Riddle, dated January 23, 1934, read before the Society. (Apply to Mr. Riddle, The American Legislators' Association, Drexel Ave. and 58th St., Chicago, Ill.)

Poor Relief

The Public Administration Service (850 E. 58th St., Chicago, Ill.) in its publication No. 37 presents "Poor Relief Laws: A Digest of Existing State Legislation," prepared as an aid to stautory revision, by the American Public Welfare Association. It sets forth briefly what the present statutes are in all the states, covering methods of administration, provisions for indoor and outdoor relief, and for state cooperation with local governments. It discloses that in some instances antiquated systems are still on the books and imperatively in need of drastic revision. 25 pp. 25c. (Apply to the Service.)

Licenses

A handbook for the instruction and use of license investigators, checkers and inspectors, entitled "License Checkers' and Inspectors' Manual," Chicago edition, has been published (copyright 1934) in photo offset reproduction form by the Home Study Circle, P. O. Box 205, Chicago, Ill. It includes: General Licensing Ordinances; License Fees in Chicago; Retail Liquor Dealers Ordinance; Wheel (Vehicle) Tax Licenses; Duties of License Checkers, Inspectors and Investigators; Specimen Questions of Previous Examinations. 35 pp. 75c. (Order from the Circle.)

Traffic

"Pittsburgh's Traffic Accident Toll During the Year 1933" is a report of 6 mimeographed pages with a one-page photo offset reproduction of a table giving a statistical summary of motor vehicle accidents in Pittsburgh for 1933. The report is prepared by the Bureau of Traffic Planning, Department of Public Safety, Pittsburgh; L. W. McIntyre, Traffic Engineer. February, 1934. During the year there were "121 lives sacrificed in accidents involving motor vehicles, a decrease of 7.6 per cent compared with the deaths from motor vehicle accidents during the year 1932." (Apply to the Bureau.)

Smoke Abatement

"What Chicago Is Doing to Fight Smoke" is explained in a mimeographed statement issued in January by the Smoke Prevention Association, Inc. (139 N. Clark St., Chicago, Ill.), which contains also brief items of progress in their field from other sources. By means of CWA funds a large corps of engineers are attacking the smoke nuisance in Chicago, supplementing the activities of the Department of Smoke Inspection and Abatement under the jurisdiction of Frank A. Chambers, Deputy Smoke Inspector, who is also Secretary-Treasurer of the Association. (Apply to the Association.)

Other Reports Received

BOSTON, MASS.—Annual Report, Public Works Department, 1932. 80 pp.

CHICAGO, ILL.—Annual Report, Department of Public Works, 1932. 388 pp.

JAMESTOWN, N. Y.—Annual Report, Board of Public Utilities, 1933. 42 pp.

NEW YORK CITY.—Report of the President, The First Avenue Association, Inc.: A Review of 1933 Activities. 7 pp.

OHIO.—Comparative Statistics, Counties of Ohio, 1932. Report of Auditor of State. 55 pp.

PASADENA, CALIF.—Annual Report, City Controller, year ended June 30, 1933. 448 pp.

CONVENTIONS—WHEN AND WHERE

(Figures in parentheses following the name of the convention city indicate the estimated attendance other than local)

MARCH 7-8.—PHILADELPHIA, PA.
American Water Works Association—Four States Section. Annual meeting. Secretary pro tem., Theodore V. Wood, 2600 Girard Trust Co. Building, Philadelphia, Pa.

MARCH 22-23.—TRENTON, N. J. (200)
New Jersey Sewage Works Association. Annual meeting. Secretary, John R. Downes, Bound Brook, N. J.

MARCH 28-30.—BERKELEY, CALIF.
Western Conference on Government. (International House—University of California.) Samuel C. May, Chairman, Local Arrangements Committee, Bureau of Public Administration, 117 Library Building, University of California, Berkeley, Calif.

MARCH 30.—WASHINGTON, D. C. (50)
National Fire Waste Council. Semi-annual meeting. Manager, Terence F. Cuneen, Insurance Department, Chamber of Commerce of the United States, Washington, D. C.

APRIL 4-6.—TORONTO, ONT. (300)
American Water Works Association—Canadian Section. Annual meeting. Secretary-Treasurer, A. E. Berry, Ontario Department of Health, Parliament Buildings, Toronto 5, Ont.

APRIL 10-12.—AUGUSTA, GA. (250)
American Water Works Association—Southeastern Section. (Partridge Inn.) Secretary-Treasurer, W. H. Weir, 4 Capitol Square S. W., Atlanta, Ga.

APRIL 11-13.—LAFAYETTE, IND.
American Water Works Association—Indiana Section. Annual meeting. Secretary-Treasurer, C. K. Calvert, 1902 North New Jersey Street, Indianapolis, Ind.

APRIL 18-19.—PEORIA, ILL.
American Water Works Association—Illinois Section. Annual convention. Secretary-Treasurer, A. E. Skinner, care The Pitometer Co., 5311 Kenmore Avenue, Chicago, Ill.

APRIL 20-21.—BILLINGS, MONT.
American Water Works Association—Montana Section. Annual meeting. Secretary, Herbert B. Foote, State Board of Health, Helena, Mont.

APRIL 30—MAY 1.—BOSTON, MASS.
New England Safety Conference. Secretary, Lewis E. MacBrayne, 6 Beacon Street, Boston.

APRIL 30.—GREENWICH, CONN.
New England Sewage Works Association. Spring meeting. Secretary, F. W. Gilcreas, Room 409, 14 Beacon Street, Boston, Mass.

MAY 1-4.—WASHINGTON, D. C.
Chamber of Commerce of the United States of America. Annual meeting. Secretary, D. A. Skinner, 1615 H Street N. W., Washington, D. C.

MAY 1.—PHILADELPHIA, PA.
Pennsylvania Housing and Town Planning Association. Annual meeting. Secretary, B. H. Ritter, 1701 Walnut Street, Philadelphia, Pa.

MAY 1-2.—BIRMINGHAM, ALA. (125)
Southern Commercial Secretaries' Association. Annual meeting. Secretary-Treasurer, Charles Ketchum, Greensboro, N. C.

MAY 3-4.—WASHINGTON, D. C. (150)
Maryland-Delaware Water and Sewerage Association. Annual conference. Secretary, A. W. Blohm, 2411 N. Charles Street, Baltimore, Md.

MAY 10-12.—EUGENE, ORE. (115)
American Water Works Association—Pacific Northwest Section. Annual meeting. Secretary, Ernest C. Willard, 720 Corbett Building, Portland, Ore.

MAY 14-17.—ATLANTIC CITY, N. J. (500)
National Fire Protection Association. Annual meeting. (Hotels: Haddon Hall and Chalfonte.) Managing Director, Franklin H. Wentworth, 60 Batterymarch Street, Boston, Mass.

MAY 24.—NEW YORK. (100)
National Board of Fire Underwriters. Annual meeting. General Manager, W. E. Mallalieu, 85 John Street, New York.

JUNE 4-8.—NEW YORK. (1,200)
American Water Works Association. Annual convention. (Hotel Commodore.) Secretary, Beekman C. Little, 29 West 39th Street, New York.

JUNE 14-15.—GREEN BAY, WIS.
League of Wisconsin Municipalities. Annual convention. Secretary, Frederick MacMillin, 114 North Carroll Street, Madison, Wis.

JUNE 25.—SALT LAKE CITY, UTAH.
American Legislators' Association. Western Bus and Truck Conference. Executive Director, Henry W. Toll, Drexel Avenue and 58th Street, Chicago, Ill.

JUNE 25-27.—STATE COLLEGE, PA.
Pennsylvania Water Works Operators' Association. Annual convention. Secretary-Treasurer, I. M. Glace, 506 South Office Building, State Capitol, Harrisburg, Pa.

AUGUST, SECOND WEEK OF.—RICHFIELD, UTAH. (300)
Utah State Municipal League. Annual convention. Secretary-Treasurer, P. K. Nielsen, Price, Utah.

AUGUST 23-24.—WHEELING, W. VA. (150)
American Water Works Association—Central States Section. Secretary, H. L. Nelson, 2435 Koppers Building, Pittsburgh, Pa.

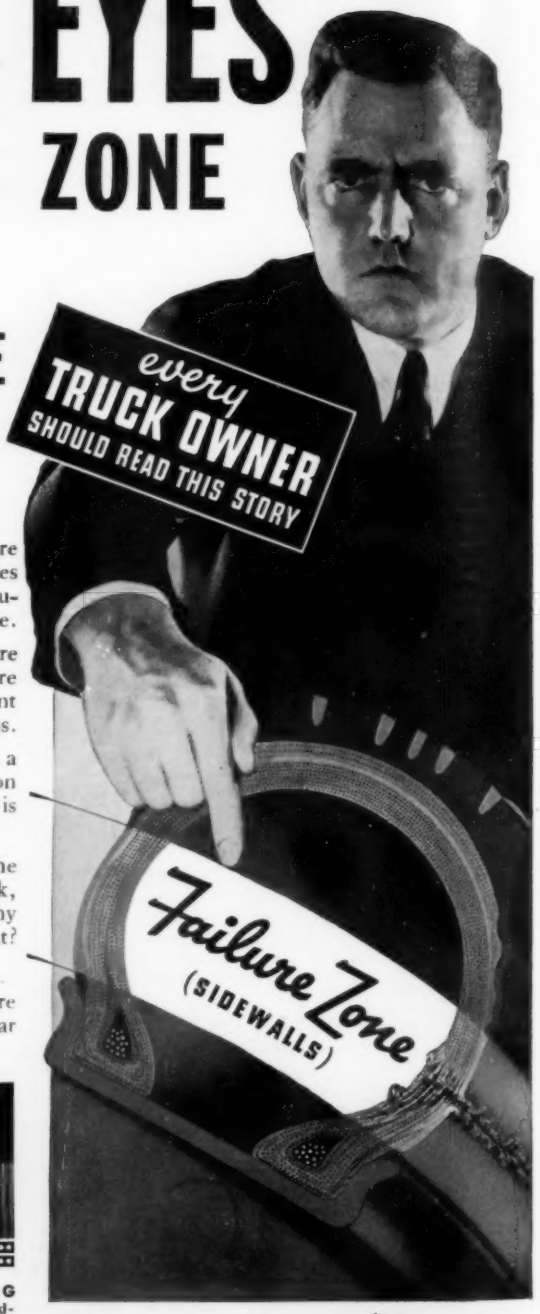
SEPTEMBER 3-6.—PASADENA, CALIF.
American Public Health Association. Annual meeting. Acting Executive Secretary, Kendall Emerson, 450 Seventh Avenue, New York.

SEPTEMBER 17-19.—SANTE FE, N. MEX. (100)
American Water Works Association—Rocky Mountain Section. Annual meeting. Secretary-Treasurer, B. V. Howe, 437 State Office Building, Denver, Colo.

SEPTEMBER 24-28.—CLEVELAND, OHIO.
American Transit Association. Annual convention. General Secretary, Guy C. Hecker, 292 Madison Avenue, New York.

"OPEN YOUR EYES TO THIS FAILURE ZONE

IT COST ME $876 A YEAR UNTIL GOODRICH SHOWED ME *Triple Protection*"



"$876 a year lost on tires which could not stand the gaff at the 'Failure Zone.' Rim breaks, sidewall breaks and blow-outs took dozens of our tires out of service long before the tread was worn." It's an old story. Thousands of truck owners have told us of their losses—from the same cause.

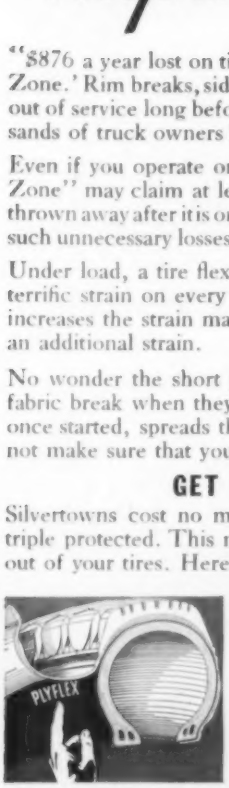
Even if you operate only one truck, the chances are that the "Failure Zone" may claim at least one of your tires within a year. A $30 tire thrown away after it is one-third worn means $20 wasted. You can prevent such unnecessary losses by using Goodrich Triple Protected Silvertowns.

Under load, a tire flexes several hundred times a minute. There is a terrific strain on every ply in the tire. Over-loading or under-inflation increases the strain many times. When the brakes are applied, there is an additional strain.

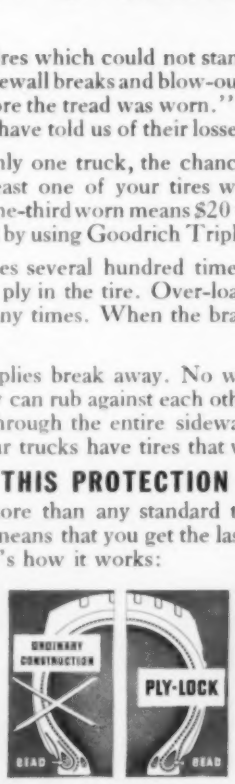
No wonder the short plies break away. No wonder the cords in the fabric break when they can rub against each other. No wonder a break, once started, spreads through the entire sidewall—ruins the tire. Why not make sure that your trucks have tires that wear out—not blow out?

GET THIS PROTECTION FREE

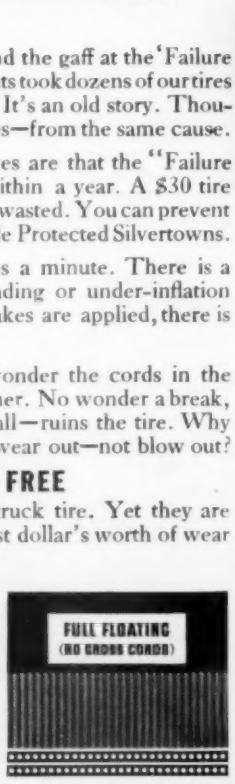
Silvertowns cost no more than any standard truck tire. Yet they are triple protected. This means that you get the last dollar's worth of wear out of your tires. Here's how it works:



1 PLYFLEX—Plyflex is a *new* tough, sturdy rubber material. Every Silvertown truck tire has a layer of Plyflex protecting the sidewall. It bears the brunt of the strains caused by the tire flexing several hundred times a minute. It distributes the stresses throughout the carcass. It prevents local weakness.



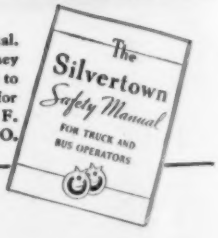
2 PLY-LOCK—The short trouble-causing plies in ordinary tires often tear loose just above the bead. A direct result of stresses concentrating at this one weak point. In Silvertowns, the plies are "locked" about the beads—anchored in place. The tapered ply ends are floated in rubber. This is PLY-LOCK.



3 FULL-FLOATING CORD—100% floated-in-rubber cord fabric is used in the new Silvertowns. Each cord is surrounded by rubber. With ordinary cross-woven fabric, when the cords touch each other they rub—get hot—break. In Silvertowns there are no cross cords. No friction. Fabric *wears longer.*

DON'T DELAY. *Get your tire costs down to rock bottom. See any Goodrich truck tire dealer. He won't ask you to buy a pig in a poke. He will make a free analysis of your truck loads and show you three convincing tests of Triple Protection.*

FREE! 48-page Safety manual. Tells how to cut accidents—save money—build good will for your fleet. How to get free Silvertown Safety Awards for your drivers. Write Dept. T-63, The B. F. Goodrich Rubber Company, Akron, O.



Goodrich *Triple Protected* Silvertowns

FOR TRUCKS AND BUSES

NEWS AND ILLUSTRATIONS

Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings

Casting Pipe Without Chill in a Metal Mold

To produce unchilled gray iron castings in a metal mold has heretofore been considered commercially impracticable if not impossible. Nevertheless, Super-deLavaud pipe, made by the U. S. Pipe and Foundry Co., Burlington, N. J., is cast without chill in a metal mold. After many experiments, it was discovered that the application of a suitable powdered material mixed with air onto the surface of the metal mold, immediately preceding contact of the iron stream, resulted in an unchilled gray iron casting. The casting so produced was found to have a denseness and fineness of metal structure previously unobtainable. The pipe is readily machinable and tests indicate an extraordinary impact resistance. After annealing, the impact resistance was still further increased.

A patented annealing process also was developed, and since deLavaud pipe is cast free from chill, it was found that by annealing at a lower temperature, but at the same time allowing the pipe to remain in the oven for a longer time than under previous practice, proper positive annealing was obtained.

To measure the impact resistance, the pipe while under internal hydraulic pressure of 65 pounds per square inch is submitted to blows from a 50-pound hammer. The initial blow for a 6-inch pipe is from a height of 6 inches, and succeeding blows are from heights increased by increments of 2 inches. The pipe is held firmly in 24-inch supports, and the blows are all struck at the same point. The number and height of the blows are increased until the pipe fails. This impact test, or a modification of it, is widely used by cast iron pipe technicians and has proved to be an excellent indicator of the resistance of cast iron pipe to shocks received in transportation, handling, and actual service. The average height of the impact hammer at failure for a 6-inch Super-deLavaud pipe is 3.94 feet, and 1.83 feet for a similar size standard deLavaud pipe.

An Electrode for Welding Cast Iron

An electrode for welding cast iron by the shielded arc process has been announced by The Lincoln Electric Co., Cleveland, Ohio. This electrode, known as Ferroweld, simplifies welding procedure on cast iron and also produces a weld of greater strength and ductility than the cast iron itself. This electrode has a steel core surrounded by a heavy flux coating which protects the arc from atmospheric gases injurious to the weld. An advantage claimed for Ferroweld is the remarkably low heat with which it can be used, thus reducing the possibility of cracking. The electrode is manufactured in only one size, $\frac{1}{8}$-inch diameter, and is used with approximately 80 amperes of current.

The method of using is to weld intermittently, not over a 3-inch bead being laid down at one time. As each bead is welded, it is peened lightly, thoroughly cleaned and allowed to cool somewhat before the next bead is deposited. Owing to the extremely low current with which it is used, the hardening effect ordinarily present along the line of fusion is materially reduced, making the weld more machinable than most cast iron welds.

Cressler Joins Graver Staff

George H. Cressler, former Vice-President and General Sales Manager of The Stacey Manufacturing Co., and Vice-President of the Stacey Brothers Gas Construction Co., of Cincinnati, Ohio, has become a member of the organization of the Graver Tank & Manufacturing Co., East Chicago, Ind. He is a graduate of the Sheffield Scientific School of Yale University, class of 1902. He engaged in consulting practice from 1914 to 1918, and served throughout the war in charge of construction of the Government Synthetic Toluol plants at various locations.

Hoffmann to Cover Southeast for Superior Engine

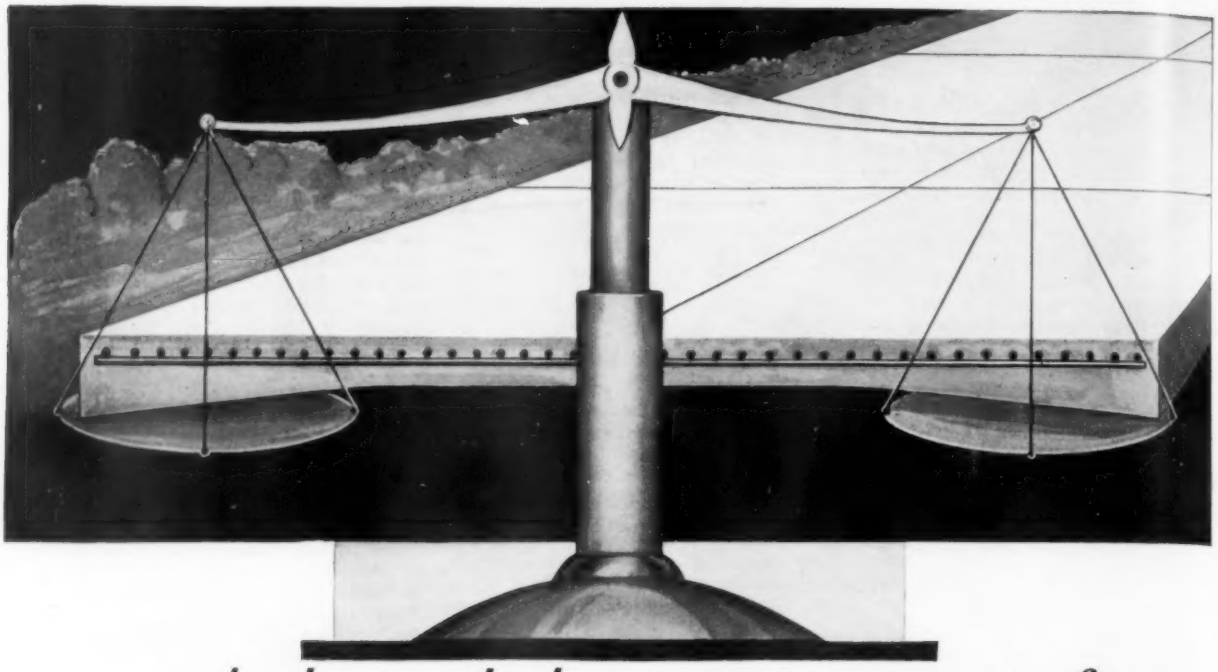
Roy E. Hoffmann has been appointed sales engineer in southeastern states by the National-Superior Co., of Springfield, Ohio. He will have charge of sales of Superior diesel engines and natural gas engines and will maintain his headquarters at Jacksonville, Fla. Mr. Hoffmann was formerly manager of diesel engine sales for Fairbanks-Morse Co. at Atlanta.

Jeffrey Opens Cincinnati and Cleveland Offices

The Jeffrey Manufacturing Co., Columbus, Ohio, has opened offices in the Carew Tower Building, Cincinnati, Ohio, and in the Rockefeller Building, Cleveland Ohio, to more effectively serve the surrounding territories. L. B. Martin will represent the parent company at the Cincinnati office, and G. D. Francisco and J. R. Warren at the Cleveland office.

THE NEW POWER-CONTROLLED CATERPILLAR ELEVATING GRADER AND DIESEL SEVENTY-FIVE TRACTOR DEFY SNOW AND FROST AS THEY BUILD AN ALL-WEATHER ROAD IN PRATT COUNTY, KANSAS, AT A REPORTED TOTAL COST OF $32.00 PER MILE

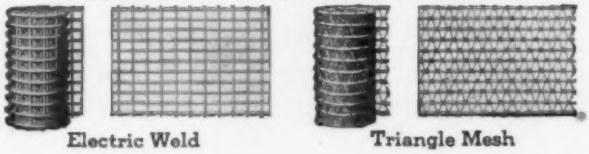
IN ROAD CONSTRUCTION



a balanced design is essential

A BALANCED design reduces future maintenance costs and can only be provided when all parts of the concrete slab or concrete base course develop the same unit stress produced from a constant applied wheel load. Cracks from various causes are liable to form in pavements in spite of predetermined expansion and contraction joints. American Steel & Wire Company Welded Wire Fabric ties these un-predetermined cracks together and maintains a balanced design by assuring genuine load transference across the cracks. Our booklet Reinforced Roads and Streets explains in detail why it is essential to properly balance the pavement design. Your copy will be forwarded upon request.

FURNISHED IN ROLLS OR SHEETS



Electric Weld **Triangle Mesh**

1831 MORE THAN 100 YEARS of PROGRESS in WIRE MAKING **1934**

AMERICAN STEEL & WIRE COMPANY

208 South La Salle Street, Chicago
94 Grove Street, Worcester

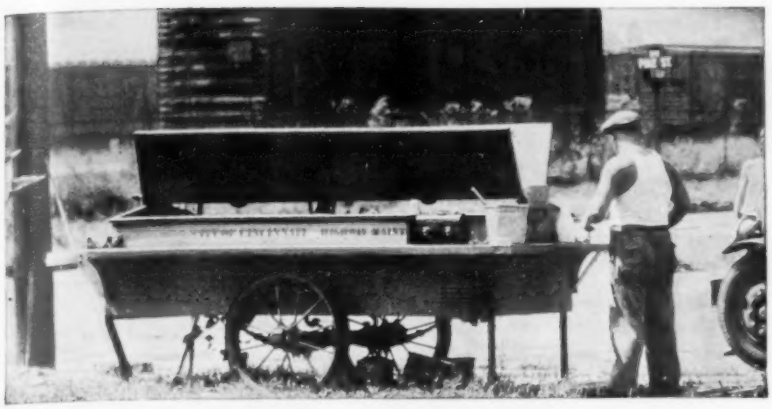
SUBSIDIARY OF UNITED STATES STEEL CORPORATION
AND ALL PRINCIPAL CITIES

Empire State Building, New York
First National Bank Building, Baltimore

Pacific Coast Distributors: Columbia Steel Company, Russ Bldg., San Francisco

Export Distributors: United States Steel Products Company, New York

During March we hope you will remember to mention THE AMERICAN CITY



THE HANDEEBOX USED BY CINCINNATI, OHIO, AS A MEANS OF PROTECTING THE HAND TOOLS OF THE HIGHWAY DEPARTMENT

A Portable Steel Tool-Box to Protect Hand Tools

A steel tool-box which is mounted on wheels and is weatherproof, fireproof and thiefproof is a valuable part of the equipment of any street highway department. The HanDeeBox made by Littleford Bros., 500 East Pearl Street, Cincinnati, Ohio, has double covers which are fastened by one lock built into the box and without a padlock. When in locked position, the covers flange over the sides of the box and are held in that position by special keepers locked the full length of the box. The keepers must be shifted to release the covers—very much the same arrangement as is used on a safe.

In addition to the locking arrangement, both the front and the rear drop legs are fastened in position from inside the box, and they cannot be released except by raising the tool-box cover. The wheels and tires can be locked to the box so that it cannot be trailed except by those having a key to it. When the HanDeeBox is locked up and left standing at the side of the road or in a field, the only way to get into it without a key is to use a cutting torch.

There is a large compartment for picks, tampers, shovels, jackhammers, etc.; a sliding shelf divided for small equipment, first aid kit and records; lantern guards, semi-elliptical springs, Timken roller bearings; and pneumatic or solid rubber tires finish off the equipment.

A Short Wave Radio Telephone and Telegraph Transmitter

The use of ultra short waves for police radio communications practically eliminates fading, giving constantly strong reception with no difficulty from large dead spots. There is no static, and signals can be received with ease during violent summer thunderstorms. Further, radiation may be confined to the area to be served, and there is no interference from distant stations or outside broadcasts. The RCA Victor "Terra-Wave" 15-watt Type ET 5004 transmitter, made by the RCA Victor Co., Inc., Camden, N. J., has been specifically designed, both electrically and mechanically, for continuous hard usage over long periods of time, and completely fulfills the exacting demands of police departments. This transmitter is compact, having the same general mechanical structure as much larger and higher powered transmitters. The over-all dimensions, including knobs on the panel, are approximately 18 inches wide by 22½ inches high by 16 inches deep. The transmitter is mounted in an angle-iron frame protected on all sides by removable perforated steel covers. The two sides, being hinged, serve as access doors. The front panel is of aluminum, coated with a baked black wrinkle finish. This 15-watt radio and telephone transmitter is of the master oscillator power amplifier type. Four special RCA-10 Radiotrons are employed in the radio frequency stages; two being operated push-pull in a tuned-grid, tuned plate master oscillator, and the other two as a push-pull power amplifier.

This transmitter has been designed to cover the frequency band from approximately 30 to 36 megacycles. The operating frequency, however, can be easily changed if desired to a somewhat higher or lower band by merely changing the various inductance coils.

The installation of the ET-5504 transmitter is extremely simple. It can be installed practically as easily as a receiver and may be moved easily, as there are only three external connections to the transmitter—the antenna, the power supply and the remote-control unit. The remote-control equipment affords the utmost flexibility of installation. This small unit, with its attached microphone, is placed in front of the dispatcher and is connected to the transmitter by means of a cable. This arrangement allows the dispatcher to be located at a considerable distance from the transmitter up to a few hundred feet, and yet have complete control of its operation. No additional equipment is required for this extension other than conduits and wires. Additional equipment can be obtained for operating the transmitter from two or more dispatching offices if desired.

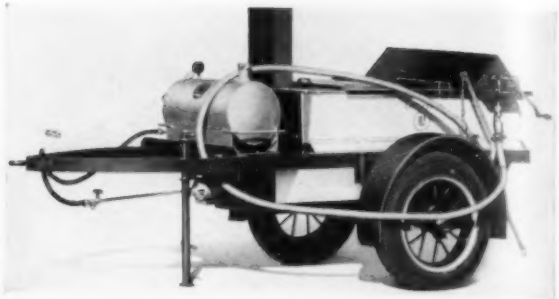
The transmitter is usually placed in a room near the antenna, with access through a window for a pair of wires running to the antenna. The transmitting system is usually furnished as a unit installed and ready for operation.

The equipment supplied for one complete unit includes one ET-5004 15-watt transmitter, complete with self-contained monitoring receiver, a remote control unit and a double-button carbon microphone; two complete sets of Radiotrons for the transmitter and monitoring receiver; one interconnecting cable, 5 feet in length, for the control box; all necessary wire, insulators, etc., for the antenna, lead-in and ground system; and a detailed instruction book containing complete installation, operation and maintenance data, including illustrations, wiring diagrams and any other data pertinent to the satisfactory operation of the equipment.

THE RCA VICTOR TERRA-WAVE 15-WATT POLICE RADIO TRANSMITTER

It takes Equipment LIKE THIS

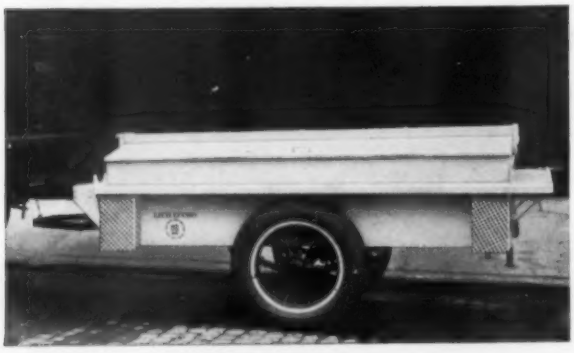
to keep your streets IN REPAIR!



The Littleford No. 84-HD Tar and Asphalt Kettle, when equipped with our hand spray attachment, makes a complete low-priced maintenance unit ideal for penetration patch work.

There is no finer maintenance outfit made for the handling of emulsions than the Littleford No. 93-AM Sprayer. It has a 70 gallon air-tight tank and operates under 40 lbs. pressure.

Use our No. 98 Surface Heater to remove the "fatty" surface from slippery bituminous macadam streets. It is also used to remove bumps from asphalt streets—it softens the asphalt so that bumps can be easily raked and smoothed out.



Stop loss and theft of tools by keeping them in the Littleford HanDeeBox. It is made entirely of steel. One lock securely fastens both covers. There are no padlocks. The City of Cincinnati uses a fleet of twenty-two HanDeeBoxes.

YOUR city highway department no doubt has a variety of street surfaces to keep maintained—asphalt, wood block, brick, tar bound macadam, etc. How to keep them in first-class shape at low cost is probably quite a problem, and the right kind of equipment plays an important part in solving it.

Ever since 1900, when the first Littleford tar kettle was made, we've given a great deal of thought to street repair work. The result has been the development of a remarkably complete line of maintenance equipment—tar and asphalt kettles of capacities from 10 to 1,500 gallons . . . pressure distributors . . . surface heaters . . . tool boxes . . . and all sorts of paving tools and pouring pots.

From the Littleford Line of Equipment you can select outfits particularly suited to your requirements. Write for our complete catalog—look through it—you'll see equipment to fit in perfectly with your maintenance projects.

NRA WE DO OUR PART

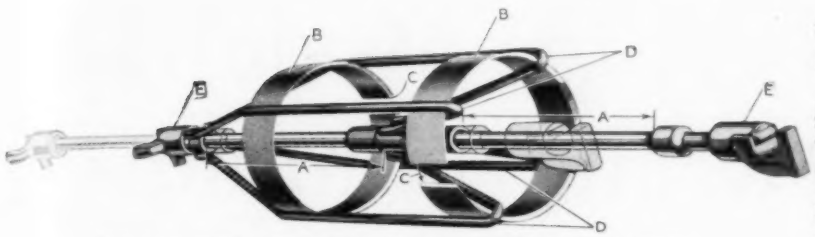
THE SIGN OF A GOOD HEATER LB LITTLEFORD BROS. CINCINNATI, OHIO

LITTLEFORD

Road Maintenance Equipment

SINCE 1900

LITTLEFORD BROS. 500 E. PEARL ST. CINCINNATI, O.



THE NEW TURCO ROOT CUTTER WITH A PILE DRIVER ACTION

New Sewer-Cleaning Tool

A sewer cleaner with a pile-driver cutting action has been developed by The Turbine Sewer Machine Co., Inc., 5210 West State Street, Milwaukee, Wis. This Turco root cutter is a distinctly new idea in sewer-cleaning tools. It has a 12-inch pile-driver stroke, effective in either direction to cut out stoppages, and the two circular double-edged cutting blades will cut on both forward and rearward strokes. It is built with contraction spaces to allow the tool to pass bad joints, and the four guide runners center the tool in the sewer and equalize the pile-driver blow and the circular cutting blades. There are sewer rod couplings at each end of the tool, and any type of coupling may be welded in place as required by the department. The chopping strokes forward and rearward are applied by men in opposite manholes.

The method of operation of the Turco root cutter is simple. Sewer rods are pushed between manholes, in the section where the stoppages occur. The Turco root cutter is then coupled to the sewer rods in the upper manhole. A man in this upper manhole adds sewer rods until the tool is tight against the stoppage. The slack in the driving rod is then pulled back, and a series of alternate forward and backward thrusts on the sewer rods by the operator imparts hammer-like blows to drive the cutters against the stoppages until they are cut out. The surplus sewer rods are removed at the lower manhole as the tool progresses within the sewer. If desired, this root cutter can be operated by attaching sewer rods to only one end of the tool.

Batteries for All Kinds of Trucks

Following its introduction of the new "Electro-Pak" automobile storage battery for passenger cars, The B. F. Goodrich Co., Akron, Ohio, has announced an extension of its line to include batteries made for practically every size truck, bus, fire truck, taxicab and tractor. The plates in the new batteries are of special bus and truck design, heavier than those used for passenger car batteries. The separators are of the highest grade vertical grain Port Orford cedar, whose insulating strength is increased by perforated rubber sheets. This tends to retain the active material in the positive plates, and prolong battery life.

The connectors are large, flexible lead-coated copper strips, which will carry the high discharges necessary in truck and bus operation, and because of flexibility do not break on account of the severe vibration to which the battery is subjected. Genuine hard rubber cases are used unless wood is desired. Bus and truck T & H types carry a guarantee and adjustment policy for 8 months, or 24,000 miles; passenger car Super types in truck service, 12 months, or 24,000 miles; and passenger car standard and heavy-duty types in truck service, 9 months, or 18,000 miles.

A New Model Succeeds Previous Model of Tractor

A new Twenty-Eight tractor has recently been announced by the Caterpillar Tractor Co., Peoria, Ill., to succeed the model Twenty-Five. The machine incorporates all the features of design and construction that have been characteristic of the Twenty-Five, plus increased power and weight.

The 4-cylinder valve-in-head engine has a bore and stroke of 4 3/16 x 5½ inches and develops a maximum of 30.49 hp at the drawbar and 37.47 hp at the belt. Ground contact, with standard tracks, is 1,251 square inches and the shipping weight is 7,870 pounds.

A Demonstration Sewage Treatment Plant

The technical staff of Guggenheim Brothers, 120 Broadway, New York City, after two years of intensive work has developed a chemical process for the treatment of raw sewage in which all putrescible matter is disposed of completely, and the resulting effluent is of high purity. A six months' test on domestic sewage at the rate of 28,000 gallons per day has recently been completed and the results have confirmed the belief that the process will have a wide range of application in the solution of sewage disposal problems. To further demontrate this process Guggenheim Brothers have made an offer that at their own expense they will design, construct and operate a complete plant of 1,000,000 to 3,000,000 gallons daily capacity for some municipality, provided that the municipality will agree to take over the plant and make payment therefor upon adequate proof that the plant performs up to a set standard.

New Simplex Wire and Cable Officers

Simplex Wire & Cable Co., 79 Sidney Street, Cambridge A, Boston, Mass., at its annual meeting on February 19, 1934, elected the following officers: President and Treasurer, Henry A. Morss; Vice-Presidents, Philip Morss; Everett Morss, Jr., and Charles R. Boggs; Assistant Treasurer, J. Arthur Gibson. Charles R. Boggs was also elected a Director.

Johnson-March Corporation Moves Offices

The Johnson-March Corporation, manufacturer of Hunt Process, an asphaltic compound for curing concrete; Ritecure, a new transparent curing medium; and McEverlast protective coatings for pipe lines, has announced the appointment of Gloster P. Hevenor as Vice-President and General Manager. This company has recently moved its offices from Long Island City to the Vanderbilt-Concourse Building, 52 Vanderbilt Avenue, New York.

Traffic Control System—Michigan Boulevard, Chicago

After our January issue was completed, the General Electric Company asked us to make a change in their advertisement. As it was impossible to do it at that time, we are printing, herewith, the change which they requested.

"The traffic-control system which was described in the advertisement as being designed by G-E engineers was designed by the traffic engineers of Chicago. General Electric engineers designed the equipment to fulfill properly the requirements. Credit for the planning of the system belongs to such nationally known engineers as Leslie Sorenson, W. C. Brandes, E. J. McIlraith, L. M. Traiser, W. I. Bell, R. W. Weir, Hugh E. Young, Robert Nau, George Barton and Dr. Miller McClintock."

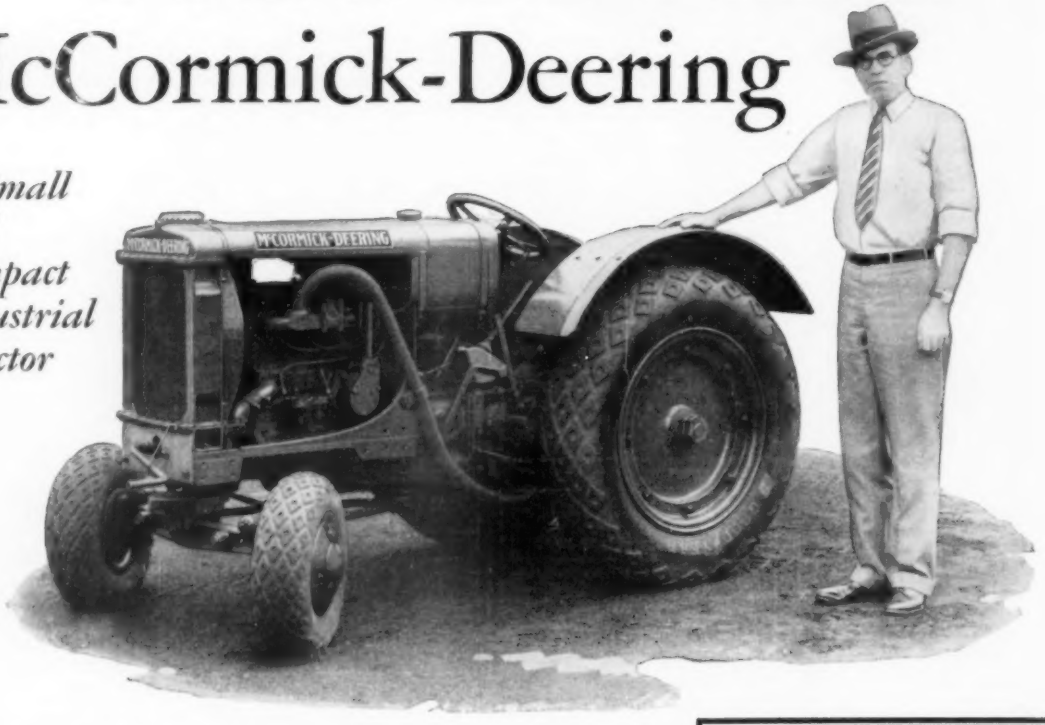
New Small Industrial Tractor

A new, small, compact industrial tractor, known as the McCormick-Deering Model I-2, has recently been announced by the International Harvester Co. of America, Inc., 606 South Michigan Avenue, Chicago, Ill. The new I-2 is 96 inches long over-all, 50 inches wide, and 52 inches high over the steering wheel, with a turning radius of only 103 inches. It has a flexible speed range from a low of 2½ miles an hour up to 10¼ miles an hour, with foot accelerator and hand control. Brakes of the internal-expanding type are operated by a foot pedal.

Features of the 4-cylinder, valve-in-head International engine are replaceable cylinders, down-draft carburetion, induction-type magneto, oil air cleaner, and oil filter with a metal element that may be easily cleaned. Easy steering is made possible by mounting the steering worm on roller bearings. The rear axle is designed for uniform stress to withstand loads all the way across. It is semi-floating and mounted on four ball bearings. Oil seals give protection against grit and dirt. A muffler, pintle-hook type spring-cushioned drawbar, and comfortable spring seat, are regular equipment. Accessible machined surfaces are provided for mounting the various types of equipment to be operated by the tractor. The frame is of two-piece bolted construction, with the transmission, countershaft and differential, rear axle and final drive gears enclosed.

Here It Is . . . the Model I-12 a NEW and Nimble McCormick-Deering

A Small and Compact Industrial Tractor



INTERNATIONAL HARVESTER announces the Model I-12—a New McCormick-Deering Industrial Tractor. The I-12 is small, compact, has a range of speeds from 2½ to 10¼ miles per hour, and turns in a radius of 8½ feet.

The International-built engine features replaceable cylinders, down-draft carburetion, induction-type magneto, oil air cleaner, oil filter with a metal element that is cleaned easily, and foot accelerator and hand throttle. Transmission and countershaft are *ball-bearing*—there are 17 *ball bearings* and 6 *tapered roller bearings* in the I-12. Steering worm is mounted on roller bearings.

The rear axle is designed for *uniform stress* to withstand shock loads all the way across. It is semi-floating, mounted on 4 ball bearings, and oil seals give protection against grit and dirt. Muffler, pintle-hook type spring-cushioned drawbar, and comfortable spring seat are regular equipment. Accessible machined surfaces are provided for mounting industrial equipment.

Ask the nearest International branch, or McCormick-Deering distributor or dealer, for information on the McCormick-Deering Model I-12. Write us for catalogs.

INTERNATIONAL HARVESTER COMPANY
of America (Incorporated)
606 So. Michigan Ave. Chicago, Illinois

Brief Specifications:

Engine: 4-cylinder, valve-in-head type, 3-inch bore x 4-inch stroke. Speed variable to 2000 r.p.m.—foot accelerator and hand throttle controlled. Replaceable cylinders. Down-draft carburetor. Force-feed lubrication (drilled crankshaft). Thermo-syphon cooling. Oil filter. Oil air cleaner. Induction-type magneto. 8-inch single plate clutch.

Transmission: 3 speeds forward, 1 reverse. 2½ to 10¼ m.p.h. 4 ball bearings.

Frame: Two-piece construction. Transmission, countershaft and differential, rear axle, and final drive gears enclosed.

Front Axle: 4 tapered roller bearings for front wheels.

Rear Axle: Semi-floating, with 4 ball bearings. Oil seals.

Brakes: Internal expanding type. Operated by foot pedal.

Wheels: Low-pressure pneumatic tires. Front—6.00/9 (21⅛ inches o. d.). Rear—9.00/24 (42¾ inches o. d.).

Fuel Tank: Capacity—11 gallons.

Dimensions: Turning radius, 8½ feet; length overall, 96 inches; width overall, 50 inches; height over steering wheel, 52 inches; front wheel tread, 39⅜ inches; rear wheel tread, 40¾ inches; wheelbase, 60 inches.

Power take-off available.

An Improved Road Material Spreader

The Koch improved revolving disc spreader for sand, gravel, cinders, chips or calcium chloride, which is hinged to the truck by means of just one long tapered bolt, has recently been announced by the Kob Manufacturing Co., 4929 North Woodburn Street, Milwaukee, Wis. This spreader is designed low enough to attach to any of the smaller trucks, provided they are equipped with a conventional-type body and hoist, and without any change it will perform equally well behind the largest capacity trucks.

Standard equipment includes the drawbars, which support the hinge bolt and are attached permanently to the truck frame, a slide door for the center of the truck tail-gate and the grooves to slide in, a control lever for the slide door, and a spout. The material is controlled at the tail-gate as it slides from the truck, in addition to the adjustment provided for the control of the quantity of material flowing from the spreader hopper through the revolving disc. With this double control, the material to be spread can be moist or dry, coarse or fine, or both coarse and fine mixed, and still spread a very light application if desired. The width of the spread is controlled by the disc speed and depends directly on the speed of the truck. Spreading speeds vary between 4 and 11 miles per hour, depending on the results desired. To confine the spread to a very definite portion of the road width, side guards or wings are provided to hook on to either one or both sides of the spreader. These guards are adjustable to varying widths.

The operation of the spreader is very simple. With the truck dump body down, resting on the frame, the spreader rides suspended, with the spreader wheels raised well off the ground, carried by the hinge bolt at the front and supported at the rear by two chains extending from each rear corner of the spreader to the top corners of the truck tail-gate. When the truck body is raised, the chains slack, and the spreader, still hinged to the long pulling bolt at the front, rests with its wheels on the ground. Any motion of the truck, either forward or backward, will turn the spreader wheels, rotating the spreader disc by the power applied, from the spreader wheels through a solid axle and bevel gear drive. All moving parts are well protected from dirt and grit and the most durable of steel is used throughout.

Kennedy of De Laval Dies

Frank W. Kennedy, Vice-President and General Manager of the De Laval Steam Turbine Co., Trenton, N. J., died on January 24, 1934, after a short illness. After graduating from Princeton University in 1898, Mr. Kennedy occupied positions with the Pennsylvania Railroad, the U. S. Steel Corporation and Dravo-Doyle Co., and in 1908 became General Manager of De Laval Steam Turbine Co. In 1916 he was elected Vice-President.

One Time Over, and Out Go the Windrows

A new device has been developed by the Drott Tractor Co., 3841 West Wisconsin Avenue, Milwaukee, Wis., for the use of one-man power graders in eliminating the windrow behind the blade. This is particularly adaptable to use on gravel roads where the power grader is used for maintenance in removing the windrow left by the blade. The Drott windrow eliminator is 12 feet long, 14 inches high, and of Z bar construction. The cutting edge is reversible and of high carbon steel. It is adjustable in horizontal and vertical planes and lateral to any desired degree. It is mounted on two heavy steel drawbars attached to a hydraulically operated cast steel bracket, cushioned with heavy-duty recoil springs. Two hand-operated hydraulic pumps, which may be located in any position convenient to the operator, manipulate all the movements of the eliminator. The blade can be lifted 10½ inches above the road surface to pass obstructions, and it has a quick drop with the hydraulic pressure downward.

Neptune and National Meter Companies Merge Canadian Interests

The interests of the Neptune Meter Co., Ltd., of Canada and those of the National Meter Co. of Canada, Ltd., have been merged. The name of the new company will be the Neptune-National Meters, Ltd., with headquarters at the old Neptune plant, 345 Sorauren Avenue, Toronto.

The manufacture of the Empire meter and the Trident meter will be carried on in what was the Neptune plant. The Managing Director of the new company will be William T. Randall, who for many years has been Managing Director of the Neptune Company.

Reo Shipments Show Increase

The Reo Motor Car Co., Lansing, Mich., has announced that shipments for the month of January on both passenger cars and trucks showed a 33 per cent gain over the same period in 1933. Truck shipments were double those of a year ago. This is the fifth consecutive month that Reo shipments have shown an increase over the corresponding month of last year. Dealer activity is the highest in years, and all indications point to much larger increases during the coming months.

Changes in Pacific Flush Tank Officials

The Pacific Flush Tank Co., of Chicago and New York City, has announced the election of Lester E. Rein, of Chicago, as President, succeeding S. Fisher Miller. Mr. Rein has been Secretary of the company for the past 33 years. Harry E. Schlenz, formerly Sales Manager, has been made Secretary and Director of the company. The New York City office is continued, with Lionel L. Langford as Eastern Manager.

Colloidal Carbon Black for Coloring Concrete Highway

An unadulterated suspension of colloidal carbon black under the trade name HiBlak is marketed by Binney & Smith Co., 41 East 42nd Street, New York, for tinting or coloring concrete highways and pavements. For convenient handling on the job, HiBlak is put out in sealed metal containers carrying 60 pounds of HiBlak, which includes 15 pounds of carbon black on the dry basis. This weight of the material corresponds to a bulk of, roughly, 6 gallons. It has the consistency of a syrupy liquid and flows quite readily. It has been designed so that there is a slight tendency to jell, which constitutes a definite advantage, since this assures continued suspension of carbon black particles and uniformity of the mix. There is no tendency to settle as in some carbon black dispersions. When it does assume a jell structure, a little stirring will quickly bring it back to the fluid form.

To produce a pleasing slate-gray color restful to the eyes and eliminating glare on a concrete highway, one to two quarts of HiBlak per bag of cement has been found to be amply sufficient. With the modern two-course type of cement highway having a 2-inch top layer, tinting by means of HiBlak may be accomplished at a price of about 5 cents per square yard.

HiBlak is easy to handle and can be measured out on the bulk basis because of its non-settling qualities. All that is necessary is that ordinary precautions be taken to make sure that the same amount is added to every batch, and the material may then be directly added to the concrete mixtures and mixed in with these in the ordinary course of mixing.

Ingersoll-Rand Acquires G-E Turbo-Blower Business

The Ingersoll-Rand Co., 11 Broadway, New York, has acquired the turbo-blower business of the General Electric Co., Schenectady, N. Y., and will consolidate it with its own Turbo-Blower Department. This acquisition places Ingersoll-Rand in a position to meet demands for blowers and centrifugal type compressors for the broadest possible variety of uses. This company is a long-established manufacturer of blowers of medium and large capacities, for pressures ranging up to 100 pounds, while General Electric has specialized in both single and multi-stage units for a variety of services in low and medium pressures. Ingersoll-Rand also secures an exclusive license under the various General Electric patents.

Thomson Becomes Kyrock President

The Kentucky Rock Asphalt Co., Marion E. Taylor Building, Louisville, Ky., has announced the election of Col. Dan D. Thomson, well known in Chicago investment circles, as President of the Kentucky Rock Asphalt Co. He was elected by the Board of Directors on February 13, 1934, to succeed W. H. Tarvin, who resigned.

—and now IT'S LAID COLD

Trinidad Lake Asphalt Cold Mixtures are prepared with the same grades of stone, sand or other mineral aggregate and Trinidad Lake Asphalt used since 1876 in the construction of standard types of Trinidad hot-mix pavements.

Trinidad is the safest asphalt for durability. Trinidad cold-laid pavements have a high coefficient of friction and are safe for modern traffic.

Trinidad Lake Asphalt Cold Mixtures are used for new construction . . . for resurfacing . . . for maintenance. Trinidad Lake Asphalt Cold Mixtures are convenient . . . can be laid with hand tools or mechanical devices immediately after preparation, or from stock piles.

Specifications and full particulars covering mixtures for asphaltic concrete, asphalt macadam and sheet asphalt (binder and top) pavements furnished on request.

THE BARBER ASPHALT COMPANY

Philadelphia

New York Chicago St. Louis

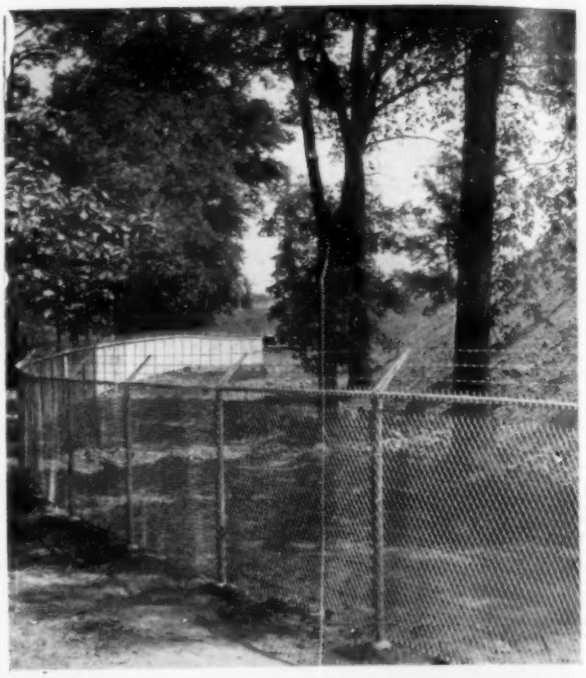
NRA

TRINIDAD

NATIVE LAKE

ASPHALT

PRICES WERE EQUAL *but*



5 NEW FEATURES *Decided* THE FENCE TO BUY

Recently a municipal project required fencing. Quotations were about equal from each of the several bidders. The job went to Continental fence because of 5 new construction features, including heavier and stronger H-section line posts; new top rail coupling, 7 in. long, that fits inside as well as outside; barb wire attached to post arms in angle slot, being automatically locked in position; new tension locking pin that eliminates all bolts and nuts in holding fabric to terminal posts; improved pivot type hinges insure perfect operation of gates without maintenance. Send for a copy of the new Continental fence catalog that shows why Continental fence *offers lower cost per year of service.*

CONTINENTAL STEEL CORPORATION

Dept. C, Kokomo, Indiana

Manufacturers of Billets, Rods, Wire, Barbed Wire, Nails; Lawn, Chain-Link, Farm and Poultry Fence; Gates; Black Galvanized, Galvannealed, and Special Coated Sheets; Galvanized Roofing (also "Seal of Quality" Roofing) and Kindred Products.

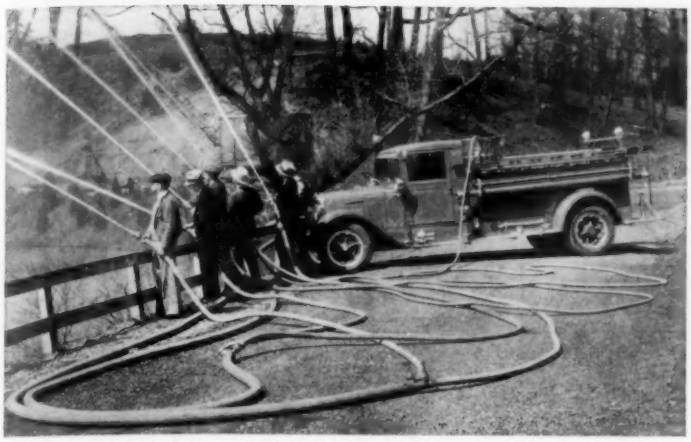
NRA

CONTINENTAL

TRADE MARK REG U.S PAT. OFF

Chain Link FENCE

OFFERS LOWER COST PER YEAR OF SERVICE



AN INTERNATIONAL COMMUNITY FIRE FIGHTER WITH A CENTRIFUGAL FRONT-END-MOUNTED 350-GALLON PUMP DISCHARGING SIX FIRE STREAMS WITH SUCTION FROM A POND

A Community Fire Fighter

The International Community Fire Fighter, offered by the International Harvester Co., 606 South Michigan Avenue, Chicago, Ill., may be mounted on a 1½-, 2- or 3-ton chassis. A 350-gallon centrifugal front-end-mounted pump is standard for the 1½-ton chassis, a 400-gallon pump is used with the 2-ton, and a 500-gallon pump with the 3-ton chassis. The front-end mounting of the fire pumps has certain definite advantages in fighting fires in rural districts where water in many instances must be pumped from streams or ponds. Even though the suction hose and the front of the truck may be on soft ground on a river bank, the rear wheels are on solid ground, and the truck may easily pull out at any time.

The heart of any piece of fire apparatus is the engine, and the time-tested International power plants used in the different capacity Community Fire Fighters are well known for their power, stamina and performance.

The equipment for the Community Fire Fighter consists of suction hose, booster water tank, booster hose and nozzle, 24-foot extension ladder, 12-foot roof ladder, 10-foot pike pole, fire department pick-head axe, combination door and window opener, soda and acid extinguisher, foam type extinguisher, electric siren, swivel searchlight, two swivel spotlights, two fire department electric lanterns and a tool-box.

New Oil Tractors

Two new tractors which are powered with a new type of oil engine operating on diesel fuel have been announced by the Allis-Chalmers Manufacturers Co., Tractor Division, Milwaukee, Wis. These A-C oil tractors are built in two models: KO which develops 48 drawbar horsepower and weighs approximately 11,200 pounds; and Model 10 which develops 76 drawbar horsepower and weighs approximately 23,000 pounds.

The engine which powers these tractors has no carburetor. A Bosch fuel pump of the open type injects the cold charge into cold air and ignites it with a spark. The compression pressure is the same as is customary in gasoline engines designed to use high test fuels, and herein lies the difference between this engine and the diesel. In this engine the compression pressure and the temperature are considerably below the self-ignition point of the fuels used, but an ordinary spark plug readily ignites the prepared fuel mixture and produces a smooth flow of power with pressures and temperatures in the cylinders no higher than exist in gasoline engines. The engine is easily started by a hand crank. A hand primer is supplied which sprays a small amount of gasoline into the intake manifold, and the engine then starts like a gasoline engine.

The A-C oil engine burns satisfactorily all fuels that are suitable for use in solid injection diesel engines of the type used in tractors and similar equipment. The same limitations as to viscosity, water, sediment and other qualities apply. Furnace oils and engine distillates of grades No. 2 and 3 are excellent fuels. The fuel consumption and cost of fuel vary, but it is claimed that the A-C oil tractors will consume, on the average, about 70 per cent as much fuel as A-C gas tractors when doing the same work.

The mechanical features of the A-C gas tractors are retained in the new oil models, including unit construction, removable cylinders and inserted valve seats. The engines, as a whole, are interchangeable between gasoline and oil-burning tractors.

Struble Heads Reo Truck Division

The Reo Motor Car Co., Lansing, Mich., has announced the appointment of A. L. Struble as Sales Manager of its Truck Division, succeeding Carl Parker, who has resigned.

Paint for Traffic Zones

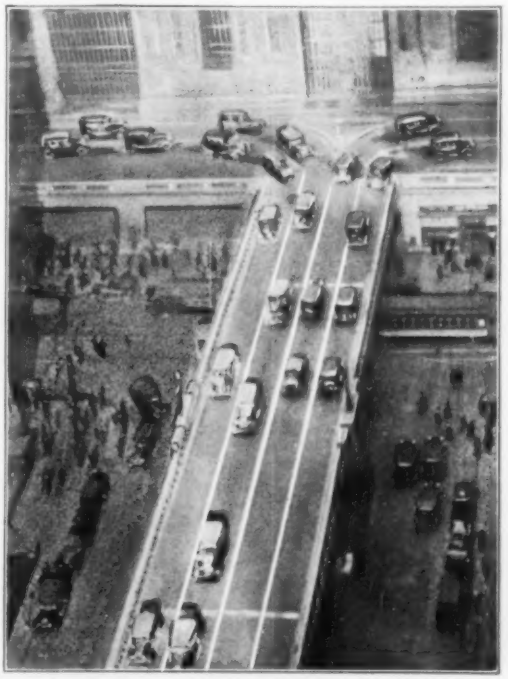
There is no other service which calls for such iron-clad characteristics in paint as its use in marking traffic lanes on highways. Everseal traffic zone paint, made by the Everseal Manufacturing Co., Inc., Fisk Building, Broadway at 57th Street, New York, dries in about 6 minutes after it is applied to the roadway, thus bringing its wear-resistant qualities into play almost immediately. It is resistant to traffic stains, staying white for a long period, and it comes ready to use. It has been used extensively in the tropics and in temperature climates as well as on frozen northern pavements where snow-plows scrape and rotary brushes grind the surface.

Allis-Chalmers Moves Buffalo Office

Allis-Chalmers Manufacturing Co., Milwaukee, Wis., has announced the removal of its Buffalo district office to the Liberty Bank Building, Buffalo, N. Y. A. D. Brown is District Manager in charge.

Jennison to Visit California

H. G. Jennison, President of the Jennison-Wright Co., Toledo, Ohio, manufacturers of Klearit Activated Carbons, has left for California on a combined pleasure and business trip. Mr. Jennison will visit the company's branch offices and representatives in the West before returning from the coast in the early part of April.



THE PARK AVENUE RAMP AT GRAND CENTRAL TERMINAL, NEW YORK CITY

Showing the traffic lanes clearly marked with Everseal traffic zone paint

Night VISIBILITY 1 Mile

Night LEGIBILITY 500 Feet

SAFETY neon FLASHERS

Illuminated Highway Signs that Operate for 1 CENT a DAY!

Note that parked or traveling cars cannot hide sign from view of drivers behind. →

Battery operated and 100% self-contained, Safety Neon Flashers have no cables or wires to string, can be installed anywhere to mark streets and highways 24 hours a day with the greater visibility, legibility and degree of emphasis needed for modern, high speed traffic control.

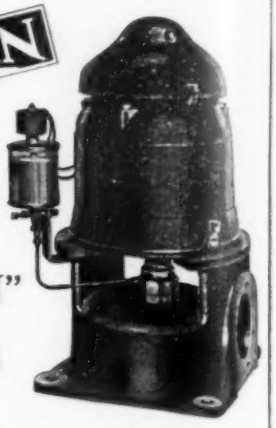
Flasher motor is not affected by temperature, humidity or vibration. Batteries, developed by Willard, have almost no shelf discharge, deliver fixed voltage for 6 or 15 month periods without water or attention and at cost of *only* 1 *cent a day.*

Safety Neon Flashers can be furnished complete in every type of standard and built-to-order sign, safety zone marker and traffic signal. Write for details.

Send for catalog and complete data to

THE LAKEWOOD ENGINEERING COMPANY
Signal Division
505 Dublin Avenue, Columbus, Ohio

AMERICAN
AURORA, ILL.



NEW "AMERICAN" TURBINES

The new "American" Turbines have all the features that have made them standard equipment in municipal pumping stations for many years—efficiencies that materially reduce the present cost of pumping water. These new turbines are designed for wells as small as 6 in. in diameter, and are equipped for either oil or water lubrication. "American" engineers and sales offices will gladly furnish data to municipal engineers or officials on this new, low pumping cost turbine.

THE AMERICAN WELL WORKS
General Offices and Factory
AURORA, ILLINOIS
Branch Offices
CHICAGO NEW YORK
Agencies in all principal cities

SIMPLEX VENTURI TYPE METERS

ACCURATE - RELIABLE - SIMPLE
EASY TO CHECK AND ADJUST

Write for Bulletins

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Manufacturers of Meters and Controllers of Venturi Type; Gauges; Air and Vacuum Valves; Air Release Valves; and other Water-Works Devices.

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ASPHALT HEATERS
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MOHAWK ASPHALT HEATER CO.
Frankfort New York

Outdoor Lighting

A Section of *The American City*
Devoted to the Lighting of Streets, Highways, Bridges, Airports, Athletic Fields and Parks, and the Floodlighting of Public Buildings

Metropolitan District Commission of Massachusetts Uses Sodium Lighting

By **BENJAMIN R. DAVIS**
Director and Chief Engineer of Park Engineering, Metropolitan District Commission of Massachusetts

ON Wednesday night, January 10, a system of street lighting of an entirely new type was turned on at the clover-leaf intersection of Broadway and the Revere Beach Parkway, Revere, Mass. The Metropolitan District Commission, in conjunction with the Suburban Gas & Electric Co., is sponsoring the first commercial installation in this country of sodium lighting as well as the first installation in the world using large-size sodium lamps.

Lighting a Danger Spot

Ever since this overpass was built, some three years ago, it has been a danger spot at night because of the lack of illumination. When the decision was made to light this intersection, Mr. Chisholm, Manager of the Suburban Gas & Electric Co., talked with C. A. B. Halvorson, consulting engineer at Lynn, who made the suggestion that the new 10,000-lumen A. C. sodium lamp which had just been developed in the Research Laboratory of the General Electric Co. be carefully considered in the solution of this problem. At Mr. Chisholm's invitation, the writer and other engineers of the Metropolitan District Commission, with Mr. Cogan, G. E. district lighting specialist, accompanied him on a visit to the General Electric plant at Lynn to see the sodium lamps. The visitors were much impressed with the new illuminant, particularly because of its high efficiency, increased visual acuity and distinctive golden color.

At first, some believed that present forms of street-lighting fixtures could be used with the sodium lamp, but after a demonstration on the factory street, Mr. Halvorson convinced the writer that a new luminaire was needed. Following a few trials, he proposed the type of fixture described below, which is the first luminaire especially designed for sodium lamps to be used in this country.

The design of the luminaire having been accomplished, the lighting of the intersection itself was laid out at average spacing of 250 feet. The General Electric sodium luminaires, Model No. 2AM2TA2, are mounted on Union Metal standards, design No. 5154 with fluted shaft giving a height of 19½ feet to the light center.

As a result, one of the most important traffic intersections of the North Shore is now lighted with large A. C. sodium lamps operating on a 6.6-ampere series circuit.

What Is This Sodium Lamp?

This lamp is a new development of the General Electric "House of Magic" at Schenectady. The light-reflecting unit, while based on an old principle, is radically modern in appearance and, with the necessary control equipment, was developed by the street-lighting engineers at Lynn.

The sodium lamp is a gaseous discharge lamp similar in many respects to some of the neon lamps in common use.

ALTERNATING-CURRENT SODIUM LUMINAIRES ON CLOVER-LEAF INTERSECTION OF REVERE BEACH PARKWAY AND BROADWAY, REVERE, MASS.

GENERAL ILLUMINATION ENGINEERING CO.

Cincinnati, Ohio · · · · Carew Tower

STREET LIGHTING
- ZONING SURVEYS
- ILLUMINATION ANALYSIS
- ELEC. RECOMMENDATIONS
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- RATE ADMINISTRATION
- CONTRACT SUPERVISION

FLOODLIGHTING
- AIRPORT
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- DISPLAY
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- RECREATIONAL

Not how much energy or how many lights —

The important question in street lighting is whether your system is doing its job? Street lighting is not simply intended to be a collection of fixtures and a means of consuming energy—it has a definite purpose to perform; a job of protecting human life. To do this, it must rank high in *Seeing Value*—that quality which enables us to avoid the lurking danger of accidents and crime. How does your system rank in *Seeing Value*? Is it insuring full protection? Systems which do not, are expensive at any cost. A Liteindex analysis will give you the answer. Details on request.

LIGHTING EXPERTS SELLING NOTHING BUT SERVICE

PRUNE WITH EASE AND SPEED

BARTLETT equipment is designed to solve pruning problems. To prune properly, correct tools are necessary. Be sure—and use BARTLETT equipment.

Use Bartlett Equipment in Emergency Conservation Work

Write for free illustrated catalog showing complete line of tree trimmers, saws, lopping shears, tree supplies, etc.

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BITUMINOUS DISTRIBUTORS
HEAVY-DUTY TRAILERS
SAND SPREADERS
CHIP SPREADERS
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SWEEPERS, SPRINKLERS
STREET FLUSHERS

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508 East 19th St., New York, N. Y.

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WASHROOM floors that NEVER wear out!

The "quitting time" rush. Shuffling feet, water, lighted matches, cigarette butts. That's the story in any public washroom. In factories, office buildings, schools. A story of floor abuse.

But again—MASTIPAVE, the magic floor, doesn't care! Washroom wear doesn't ruin this floor covering. It is water-proof, durable, rot-proof, easy-to-clean. In addition —non-slip even when wet.

MASTIPAVE is safe, remarkably wear-resistant and economical. Requires practically no upkeep. Original cost as low as 14 cents per square foot LAID! Write for free booklet— AC.

THE PARAFFINE COMPANIES, INC. 475 Brannan St., San Francisco
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PABCO PRODUCTS

THE LOW-COST, LONG-LIFE FLOOR COVERING

MASTIPAVE

NIGHT-TIME VIEW OF SAME INTERSECTION, SHOWING ALTERNATING-CURRENT SODIUM LAMPS, 10,000 LUMENS, ON UNION METAL POLES

Sodium at ordinary temperatures is a solid, and so it becomes necessary to raise the temperature within the lamp to a point at which sodium will vaporize before the light assumes any sodium characteristics. In order to do this with as little lost energy as possible, a small quantity of neon gas is placed in the tube, and when the lamp is first turned on, it operates purely as an inefficient neon lamp generating a large quantity of heat.

If the lamp bulb is operating directly exposed to the air, this heat is radiated as rapidly as it is generated, and so, to vaporize the sodium, the heat must be conserved. This is accomplished by operating the sodium lamp in a Dewar flask, or, more commonly, a thermos bottle minus the silvering. The evacuated flask, made of heat-resisting glass, conserves the heat generated by the neon lamp and builds up the temperature in the lamp until it reaches 160° C., at which point the sodium begins to vaporize. By the time an ultimate temperature of approximately 200° C. is reached, most of the sodium has become vaporized and the red neon color is completely overcome by the characteristic yellow of sodium.

The possibility of obtaining light from ionized sodium vapor has been known for a number of years, as well as its higher efficiency, but until recently no glass had been developed which would withstand the attack of the hot sodium vapor.

This new lamp as manufactured by the General Electric Vapor Lamp Co. differs in physical appearance from the ordinary lamp with which we are familiar. Instead of being pear-shaped, it is tubular, 3 inches in diameter and 16 inches long, while the luminous portion is 12 inches long. All light-controlling means as employed for street lighting heretofore have been designed for a theoretical point source of light which the incandescent lamp and the luminous arc approximate. The light from such a point source is comparatively easy to control. With the sodium lamp, however, a point source is not even approximated and it is necessary to deal with a source of about 108 square inches. For this reason, General Electric engineers have designed an entirely new type of reflector, and while it is large, it is in harmony with the trend of modern architecture.

The Effective Mounting

Resembling the pontoon of a hydroplane, with two additional fins, this new fixture redirects the light up and down the street with decided asymmetry. To accomplish this, two 11-inch long sections of parabolic cylinders, opposite each other, redirect the light up and down the street. On the street side of the luminaire is a semi-circular inverted parabola, 25 inches in diameter, which throws light across the street. Since the two parabolic cylinders have a combined length of only 25 inches, there would be a great deal of wasted light above the horizontal, were it not for the two parabolic fins, which make an effective width of 5 feet, redirecting the light up and down the street.

Furthermore, by mounting the lamp horizontally over the road with its axis at right angles to the curb, a broader band of specular reflection is obtained, which greatly enhances visibility, particularly on wet nights.

The reflecting surfaces are made of aluminum, highly polished, and given a special treatment called Alray corresponding to case-hardening of steel. This treatment, developed by the Aluminum Co. of America with the photometric assistance of the General Electric Co., makes the aluminum impervious to oxidation and also permits cleansing with an agent which is not an abrasive. The reflection coefficient is high, amounting to over 80 per cent.

The control mechanism is all housed in a steel cabinet on the back of the unit. In order to supply the filaments of the lamp and the arc circuit with the correct current, an IL transformer is mounted in the base of the pole with a timing device in the cabinet which allows the proper interval for preheating the filaments.

The Visibility Attained

On the opening night we were particularly pleased with the excellent visibility which was obtained on a bituminous macadam pavement. While this type of pavement is excellent from a non-skid point of view, we have experienced considerable difficulty in lighting it, due to its low, diffuse reflection coefficient, but, as can be seen from the acompanying photograph, in this instance the "seeing ability" is remarkable. Another very pleasing feature was the manner in which the directional signs stood out because of the sharp contrast between black and white under sodium lighting. The absence of glare and the ease of seeing, with no apparent eye fatigue, combine to make this type of lighting ideal for use on the highways, and the distinctive color serves to call to the attention of the motorists that an unusual condition is ahead.

Since this was the first installation of such a novel light and control means, it was but natural to expect considerable trouble, but the writer is pleased to state that, after about 500 hours' burning, nothing of a troublesome character has yet developed, and the enthusiastic reception of the new light by the public has amply justified the decision of the Metropolitan District Commission to sponsor and pioneer this most interesting and far-reaching development.

Illumination Service since 1898

Holophane

Let Holophane Shape the Light to *Your* Streets

•

Holophane Asymmetric Refractors are most efficient because they provide illumination *only* where needed. They are most economical because you pay only for *useful* light. Let Holophane shape the light scientifically to the traffic needs of *your* streets. Holophane Company, Inc., 342 Madison Avenue, New York. Works, Newark, Ohio. Canadian Office, Toronto.

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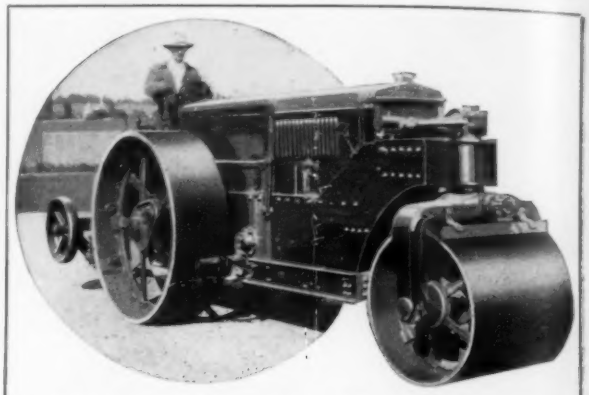
HOLOPHANE

REFRACTORS FOR STREET AND HIGHWAY LIGHTING



The answer's the same—

Whether you are looking for a heavyweight, three-wheel, 16-ton roller for the heaviest kind of compaction on a highway job, or a lightweight model for a tennis court,

the answer's the same:

If you want *ruggedness*, you choose—

BUFFALO-SPRINGFIELD

There's a model and size for every requirement.

THE BUFFALO-SPRINGFIELD ROLLER CO.

Springfield Ohio

OVERLOOKING • • SAN FRANCISCO

LOW RATES

Comfortable rooms
hospitable · service··
excellent inexpensive cuisine

FROM FOUR DOLLARS A DAY UP

COURT ROOMS-THREE FIFTY

THE MARK HOPKINS
OR
FAIRMONT HOTELS
SAN FRANCISCO

•

FOUR MINUTES FROM SHOPS & THEATRES · GARAGE IN BUILDING

LORD BALTIMORE HOTEL

AS MODERN AS TOMORROW

Truly one of America's finest hostelries with every refinement of the sumptuous hotel. And a price range that is definitely modest.

RADIO IN EVERY ROOM

700 ROOMS
EACH WITH BATH

$3 UP

WALTER L. JACKSON
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All Garage Facilities

BALTIMORE
MARYLAND

PERIODICAL ROOM
GENERAL LIBRARY
UNIV. OF MICH.

APRIL, 1934

The American City

Worthy of Emulation by American Municipalities

In the reservation and beautification of their waterfronts and river banks in the public rather than private interest, providing adequate facilities for leisure-time enjoyment, many European and South American cities have done much that municipalities in the United States might well emulate.

This view of Rio de Janeiro, Brazil, shows in the foreground the Jardim da Gloria, and the Famous Pao de Assucar (Sugar Loaf Mountain) in the left background.